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The Coal Mine Gatehouse

MANY coal mines have but one opening that is used for both an entrance and exitway for employees. For various practical reasons, this plan is extremely desirable. Of course, certain escapeways and danger exits are provided against that day of disaster which every mine operator hopes he'll never see—a day when strong men and frantic women rush to the main opening to learn who is inside and who is out.

But what if your mine does have only one opening for entrance and exit, and you don't know who goes in and out, nor when?

If such a slipshod plan exists at any of your operations, you can rest assured you are paying the price for your indifference. It is almost certain that the time will come when, despite your best efforts to insure safety, an instant inventory of entombed and imperiled lives will be imperative.

However, assuming that you are fortunate and that none of your mines becomes the victim of a mine explosion, there is still another side to the story and an excellent reason for the establishment of a mine gatehouse at the entrance to every manway where men pass underground. Such an establishment efficiently administered will save dollars for any coal-mining company.

BRIEFLY, a mine gatehouse is a place at the entranceway where men are checked in and out of the mine. The principal elements are a man to perform the checking work and a system for doing it efficiently. The results, concretely expressed in money saving, are as follows:

I. AN ABSOLUTE RECORD OF THE TIME every man enters and leaves the mine. If he is a company man, his pay will in effect be based on the gatehouse record. The inside foreman can follow what he does inside and report his occupation, etc. The big factor is that the gatehouse record tells you whether he was in the mine and the exact number of hours. It precludes absolutely the giving

of a full shift to a man who came out at noon without the knowledge of the foreman.

You don't want to pay a \$5-a-day man full time for a half day's work, but if there is no gatehouse at your mine you've done it over and over again. Or, if ten men come out an hour earlier than they should by some process of inside malingering, you lose one full shift of a ten-hour turn if you pay them full time.

2. ANOTHER WAY the gatehouse saves money for you, Mr. Mine Operator, is by saving it for your men. Wherever such a plan has been installed the men fall in love with its results for them. Why? Because the record of their going and coming is so practically indisputable that if the inside foreman should fail to report time for them, the gatehouse rarely fails to establish their claims. This means full payment for all work performed, which in turn means contented employees; and that, Mr. Mine Operator, means money to you.

3. *THE GATEHOUSE CATCHES SLACKERS.* The fellow who has been beating the game can't beat it any more, while the man who never tries to beat it knows he is sure of a square deal. Don't forget this. Your best employees are hurt more than you when the slacker in the mine is paid for a shift he didn't work. There is morale in a coal mine the same as in an army, and there are sure ways to break it down.

THERE ought not to be a coal mine of any size anywhere without a gatehouse. An unchecked mine entrance is like an uncharted sea. It is full of danger. But there are thousands of them, some even are owned by concerns that operate large outside plants all fenced around and equipped with elaborate brass check systems. Yet the mine is run with no checking system of any kind.

They forget—and so do you, if your mine has no gatehouse—that a mine operation is largely conducted in the dark and over an area usually far larger than the ordinary outside plant operating in the light of day. Yet in the mine one man (the mine foreman) is generally held responsible for the time of his men, while invariably timekeepers are hired for this in outside plants.

Preparedness and efficiency go hand in hand. They cannot be divorced. The mine gatehouse spells both. *Coal Age* will be glad to have the details of the best mine gatehouse plans in use for passing the information on to the fellows who have not yet learned their value.

Ideas and Suggestions

Surveying and Mapping

BY W. L. OWENS
Scottdale, Penn.

It has been my experience in visiting the drafting rooms of various coal-mining companies that invariably I have found everyone, from chief draftsman to blue-print boy, curious to know the methods of surveying and mapping employed by the company I represent. Also, they have always seized upon small details that I had supposed were known to everyone and applied them with considerable advantage to their own particular system.

I have taken ideas from half a dozen companies, large and small, and have compiled from them a system of engineering which I believe is highly efficient. In this article, however, I will confine myself to just a few points—namely, continuous numbering of stations and a few ideas on map work.

As this is not a treatise on engineering, and at best only an outline, I will start with the supposition that surveys have been carried from triangulation points to the pit mouth. Calling the station at the pit mouth **zero**, and the succeeding stations, 1, 2, 3, etc., the station number is not dependent on either backsight or foresight, but is determined by the number of the last station that was established in the mine. If the last station was 467 and was in Third Right Heading, the next station to be established is 468, no matter in what heading it is placed or from which station it is established.

The advantage of this system of numbering is that there is only one station of any particular number in the mine. This is a great help in locating yourself.

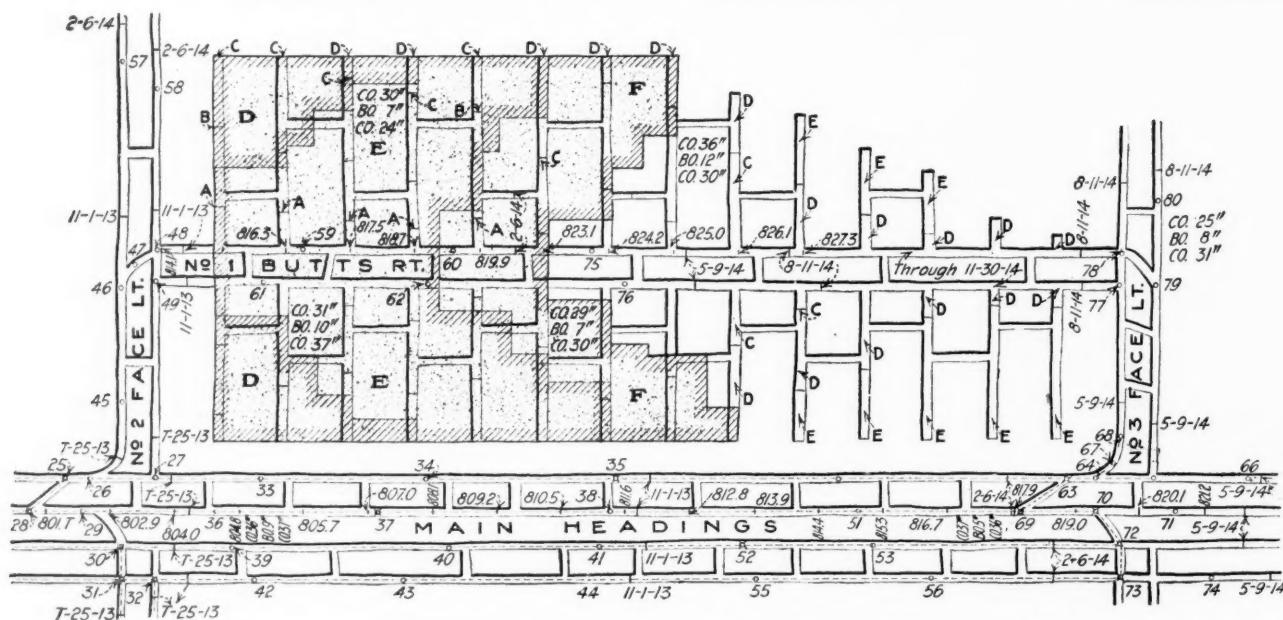
For instance, if there is someone making an inspection of the mine who is not familiar with the different headings, he can immediately locate himself by noticing a station number painted on the rib and picking out that number on his blueprint of the mine. This is not possible where one number represents several stations. I know of several companies that have at least 20 stations numbered zero, 1 + 00, 2 + 00, etc.

If you desire to know the coördinate value of a station and your traverse sheets are properly numbered and indexed, you can look on the index sheet and immediately see to which sheet to refer for the value of any station.

A special page should be kept in the back of the transit book, and each day the number of the last station established should be noted, giving the date and by whom established.

Side notes should be taken at every station and cross-cut, and more often if necessary, thus accurately locating the ribs with reference to the survey line. One company I know of regards 10 ft. as a uniform heading width and seldom takes side notes. The result is that in one instance where the heading width had been changed from 10 ft. to 15 ft. the office did not know this fact until long after the survey had been plotted. With the company of which I speak it is the usual custom to draw all curves on the haulage headings with a compass, and no notes of irregularities are taken in the mine. Now, I am willing to wager that there is not a mine in the country where all curves have been driven without error either of transitman or mine foreman.

Freehand drawing is the only accurate method of showing a true rib line; the mine plan made to accom-



METHOD OF NUMBERING STATIONS, SHOWING ELEVATIONS AND GOB AREAS

pany this article will show the system of mapping. In general, station numbers, elevations, dates and coal sections are written to the right of the entry, facing in the direction the entry is driving. I prefer to use red for station circles, connecting lines and numbers; blue for elevations and black for dates and coal sections. To avoid crowding the map by dating all the rooms, it is better to make a "List of Surveys" chart on the title sheet of the tracings. This is also convenient in dating gob areas.

In case you desire to balance the surveys, it is a good custom to connect the stations with a red line; and as it is not necessary to coördinate all stations, you can distinguish those for which you have balanced values by putting "ears" on the station circles.

"Spattering" is the neatest method of showing gob areas. It is done by placing transparent paper on the map and tracing the outline of the gob in pencil; then cutting along the pencil line with a knife leaving the gob area exposed while the surrounding space on the map is protected by the transparent paper. Now take a toothbrush which has been softened by water and dried thoroughly, and spatter ink on the gob area, by putting a few drops of ink on the brush and then rubbing a match or a toothpick over the bristles. The spray will fly in the direction opposite to that in which the bristles are bent. A neat job is accomplished when the spray is fine and uniform, and free from all thick particles of ink. The hairlines showing gob outlines should be fine and close together, and particular care should be taken to get sharp corners where the gob line makes an angle, as round corners spoil the whole appearance of the system.

Tinting tracings is best done by putting a blotter under the tracing and rubbing a crayon on the rough side of the cloth. The color is apt to wear off somewhat if it is not rubbed in with a stub purchased for that purpose, but a good stub may be made in a few seconds by wrapping a piece of linen around the small end of a penholder.

A Substantial Rope Guide

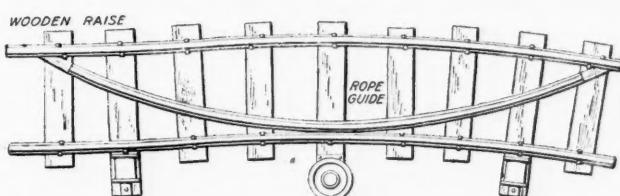
BY RALPH W. MAYER
Roslyn, Wash.

In rounding a long curve, the haulage rope sometimes catches under the head of the rail. This wears out the rope and makes the pull on the engine heavier. To prevent this, and to force the rope to rise above the rail and onto the rollers, a full length of rail is bent into a crescent shape—bent just sufficiently to allow it to lie between the two track rails, where it is spiked fast to the ties. The middle of the curved part of the rail is placed next to the track rail over which it is desired to have the rope pass. The distance between the track rail and the rope-guide rail should only be a trifle more than the thickness of the flange of the car wheel.

To prevent the rope from catching upon the ends of the curved rail, the ends may be flattened out to a wedge-shaped point. An easier method, and one that answers the purpose equally as well, is to use wedge-shaped pieces of wood or blocks tapered to a point at one end and having the same thickness as the rail at the other end. These are spiked fast to the tie next

to the ends of the bent rail. The haulage rope, when it strikes these wooden raises, or wedge-shaped blocks, slides up them onto the rope-guide rail, thence over the track rail and onto the rollers and upright drums.

If the rope guide rail is placed several inches higher than the track rail, it helps to carry the rope over the



SUBSTANTIAL ROPE GUIDE

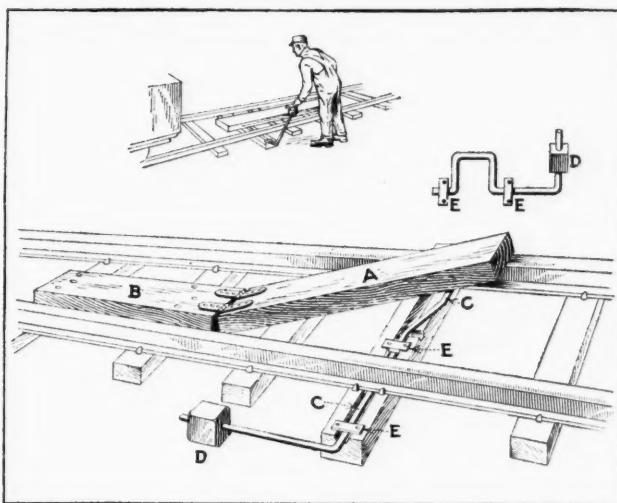
latter rail. These rope guides should be placed from 10 to 20 ft. apart, according to the degree of curvature of the track, and should extend from where the curve commences to where it ends. Old and worn-out rails can be used for making the rope guides.

Another Safety Car Stop

BY O. W. MAULDIN
Dara, Ala.

The accompanying illustration shows a safety car stop which I think is more convenient and just as safe as those illustrated in *Coal Age* of Aug. 4 and Sept. 15.

The timber *A* should be about 3 x 12 in. by 8 ft. and hinged to the piece *B*, which should be securely spiked or bolted to the ties. The rod *C* is bent under the



CONVENIENT SAFETY CAR STOP

timber *A* in such a way as to raise the timber in line with the car bumper when the weight *D* is on the floor. When the weight is raised the timber *A* lies flat so cars can pass over it. The bearings *E* can be fastened to short pieces set between ties, or secured in any other convenient way.

The advantage of having the weight on the lever is to prevent the stop from being left open. The triprider holds this weight until the trip passes over, turns it loose, and the stop automatically goes back into position. Unless the weight is intentionally raised and held, therefore, it is impossible for a trip to pass the stop.

HOUSING DEVELOPMENTS *at* LEE PARK and WANAMIE



BY E. H. POGGI

THE Lehigh & Wilkes-Barre Coal Co., of Wilkes-Barre, Penn., located in the heart of the Pennsylvania anthracite region, has under construction, at this writing, 40 double miners' houses, at Lee Park, Penn., near their Inman and Buttonwood collieries, and 40 more at Wanamie, Penn. These houses are of two types, but the same number of rooms is provided in both and the general arrangement is quite similar. The houses are the result of an exhaustive study of local conditions by the company and its architects.

Before the work was commenced plans were submitted through E. W. Parker, of the Anthracite Bureau of Information, and C. A. Leighton, of the coal company's housing department, to the convention of the National Housing Association held at Providence, R. I., in October of the past year.

Although the plans were, in the main, approved as submitted, the criticisms received at the convention proved decidedly helpful. At the convention the coal company also presented a series of diagrammatic perspectives illustrating the development of "the miner's house" in five prior stages. Mr. Parker also made an address amplifying the information conveyed by the illustrations.

The basic facts established through the preliminary study were as follows: (1) The building plots should be adjacent to a principal highway and convenient to a trolley line. (2) The ground should be high and well-drained. (3) The houses should be of frame construction, with foundations of concrete. (4) The roofs should be of fireproof and weatherproof material. (5) The rooms should be heated with the aid of "hot air" rather than with "steam" or "hot water." (6) Lighting should be by electricity. (7) Cooking and water heating should be done by coal ranges. (8) The first story of each house unit should contain three rooms without including the bathroom, and should have an inclosed porch at the rear, suitable for laundry work. (9) The second story of each unit should contain not

SYNOPSIS—*The new houses at Lee Park and Wanamie strikingly exhibit the conveniences provided in modern mine houses and the care taken to secure suitable design. While these buildings are constructed with balloon framing, they are more than usually large and comfortable.*

less than three bedrooms and ample closet room. (10) The third story should be eliminated, but air space should be provided above the second story. (11) All materials, sizes and qualities of material should be standardized. (12) In the selection of materials and in their application the consideration of minimum maintenance cost should be given precedence over first cost. In determining upon the locations of the villages, careful consideration was given to water supply and sewage disposal. Attention was also given to the aesthetic requirements, to the grouping of the buildings and to the view that the tenants could obtain from them. Investigation developed that the plan of grouping houses around a court or plaza, although effective in plan from an architectural standpoint, is a failure in actual practice. Workingmen do not seem favorably disposed toward isolated villages, especially such as lack easy means of access to the important shopping and amusement centers.

In plotting the groups, the "gridiron" plan has been adopted, with modifications to suit the contour of the land. The streets are 50 ft. wide from lot line to lot line. This width allows 30 ft. for the road from curb to curb, and 10 ft. on each side for sidewalk and tree lawn. The sidewalks themselves are 4 ft. wide.

The lots for each double house are 60 x 120 ft. for one type of house and 70 x 120 ft. for the second type. The front line of the houses proper is established at 15 ft. from the lot line, except at points where terracing is necessary.

The levels of the first floors are adjusted to an even gradient throughout each plot. Water and sewer mains are installed in the rear of the houses, both for purposes of economy and to make it unnecessary to destroy the streets when making repairs. The buildings are grouped in such a manner as to eliminate entire the "side street" which is usual in the gridiron type of plan.

In adopting the frame building with concrete founda-

tion, in preference to brick, tile, concrete or concrete block, the advantages of speed in erection and availability of material were important factors. The frame house admits also of easy readjustment should the property suffer through surface subsidence such as is liable to occur in mining territory.

The buildings are located at such sufficient intervals as will provide against a general conflagration and for further fire prevention they are roofed with asbestos shingles. The extreme durability of this type of roofing, however, was a further reason for its use.

The company first experimented with what was termed the type "A" building. It was similar in all respects to type "B," which is shown in the plans, except that the roof of the type "A" building was flat and the sheathing was covered with what is termed a "slag roof."

The first story of the "B" type of building, which was finally adopted as a standard, provides for two families, a parlor, living room, kitchen and bathroom. Porches at the rear are inclosed so that they can be used as laundries. The front porches are of the open type.

The porches at both front and rear are partitioned so as to eliminate any possible conflict between tenants. The second story of the "B" type of building contains on each side three bedrooms, with closets, and a connecting passageway or hall.

The "C" type of house presents an attractive variation from the more commonplace "B" type, although it contains the same number of rooms and has the same general arrangement. It has a greater frontage and a lesser depth from front to rear. It provides two advantages over the "B" type. First, the passageway or hall on the second story is eliminated with economy of space, and secondly, the plan provides much better light and cross ventilation, a better view and easier access to each important room. Incidentally, the porches at the front are more widely separated than in the "B" type house, and the exterior appearance is somewhat more pretentious. This type of house costs approximately 5 per cent. more than the "B" type.

It will be noticed that the bathrooms have been placed on the first story in both types of building. This departure from custom was taken because it was felt that the miner upon his return from work should be provided with an opportunity to change his working clothes and to bathe, before entering the house proper. This he will appreciate because he is accustomed to bathe immediately after each day's work.



HOUSE B-20 AT 9:30 A.M., SEPT. 20, 1907
First stick was laid on the foundation at 8 a.m.

The relative location of the bathroom, kitchen and laundry also has advantages, as it makes the toilet accommodations readily accessible to the kitchen. Where the housewife has children they usually play under her supervision on the floor of the kitchen, and it is handy to have the bathroom near the room most generally in use. In the kitchen the meals are prepared and the laundry work done, and so it is by far the most extensively used room in the house.

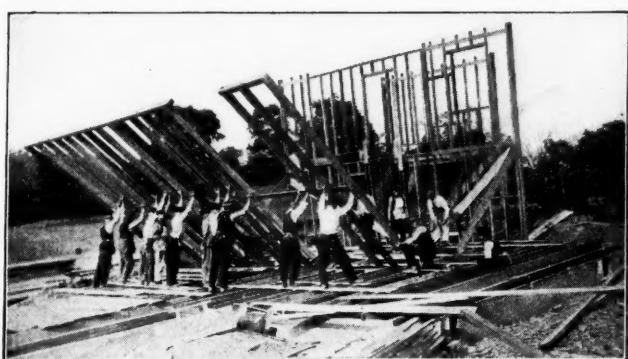
A large trimmed opening is provided between the inclosed rear porch and kitchen, not only to afford a desirable circulation of air, but to permit the supervision of the kitchen by the mother when engaged in laundry duties. Incidentally, the arrangement and location of the bathrooms is such that all piping of the hot-water boiler, the range, the sewer and the water supply is reduced to a minimum.

As these residence groups are located in the mountainous districts of the Wyoming Valley, the exterior design is modeled on the Swiss chalet. In a degree the general spirit and outline of this type of dwelling were adopted, though variations were made to suit the local conditions.

It was, however, realized by owners and architects alike that the careful plotting of groups, the picturesque chalet design and the variation of types would not overcome a monotony of color. With this thought in mind, a "belt course" was placed on all houses, immediately above the first-story windows, and a carefully standardized chart prepared providing for the use of 16 colors for each group.

Of these, three were chosen for "trim," such as belt courses, water tables, corner boards, window frames and sash, porch railings and posts, etc. White was tabooed, and pale tints of cream, gray and green were adopted.

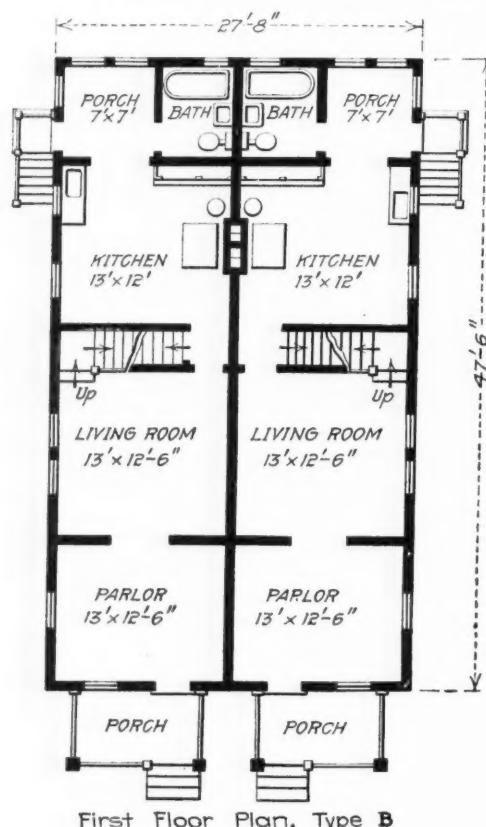
Individual colors were chosen for each item of porch floors, porch ceilings and exterior doors. Dark green was chosen for the latter, as a most serviceable shade. The remaining 10 colors were then charted in pairs for use either below or above the belt course, and in each case the color below the belt course was repeated in the gables. The 10 colors thus used formed five combinations which, however, are reversed on the next five buildings, making 10 color combinations in all.



HOUSE C-9. SHOWING METHOD OF ERECTION
This house was ready for plastering 18 hours after completion of foundation

Each combination consists of a dark and a light tone. Where the dark tone occurs upon a building as the color of the lower body, the dark color on adjacent buildings appears as the color on the upper body and *vice versa*. The whole scheme in this work presents a delightful combination of harmonious tones and has abolished the monotony so offensive in the "old red row."

All plumbing fixtures are of the best grade of enameled or vitreous ware. The brass work installed is



First Floor Plan, Type B

everywhere heavy. The sinks are of enameled iron with a flat rim, and the drain boards are covered with sheet zinc. Bath tubs and basins are of enameled iron, and the closets and tanks are of vitreous china, with the tank lids bolted on.

The electric wiring is of the type known as "BX Conduit" equipped with high-grade switches suitably placed. Electrical fixtures are furnished wherever needed. A 12-in. pan shower of three lights each is used for the parlors and living rooms. The lighting in the kitchen is afforded by a two-light, three-piece fixture, with 5-in. body ball and 16-in. spread. The sockets turn up so as to prevent the breakage of the bulbs. The basement fixture is a 1-in. conductel fastened to a metal fitting.

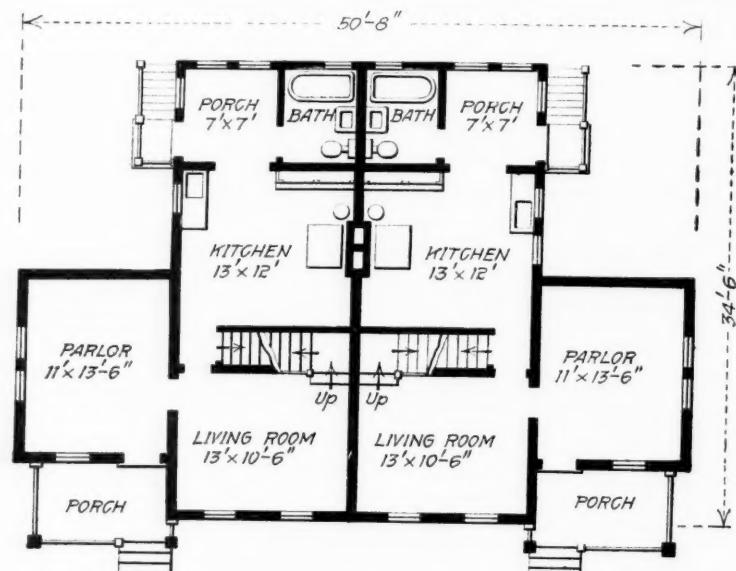
Bathrooms, rear porches, bedrooms and halls have porcelain fittings covered with brass canopies, with sockets close to the ceiling. These are operated by bead chains in pull sockets. No glassware or shade holders are furnished except in living rooms and parlors. The shades are of the heavy type, tulip pattern, with edges turned in to prevent chipping.

The hardware throughout is of substantial quality, and all the interior finish is black-japanned. The interior locks are of the rim type, and the locks for

exterior doors are of the mortise type. The exterior finish is of antique copper. The door bells are of the rotary type.

Owing to the difficulty of obtaining hardware under existing market conditions, it was necessary to purchase it from eight different manufacturers. For this reason carefully prepared schedules were furnished to the owners to facilitate replacements.

For the heating of each house a scientifically distributed system of piping and a hot-air furnace were provided. The furnace radiators are of cast iron, this material being preferable to steel. The second-story



First Floor Plan, Type C

heat flue is taken off the feed pipe which supplies the first-story flue, thus inducing circulation to the first-story registers. All bends and Y's are of standardized form and radii.

These houses are being built according to a time schedule, and it is estimated that they will be completed at the rate of 5½ days per building. This is made possible through the use of modern equipment for all



HOUSE B-20 AT 4 P.M., SEPT. 21, 1917
This house was ready for plastering 15½ hours after starting carpenter work

branches of the work. Foundations are installed in three lifts with the use of adjustable and portable forms.

All framing is installed from framing plans furnished by the architects, similar to those customarily used for steel construction. Each piece of timber is cut from a templet and numbered. Wall framing is put together horizontally, and the frame of an entire building can be raised in 18 min. In every case when the framing

is done provision is made once and for all for heat flues, window and door openings, plumbing and other items which require a subsequent cutting of the timbers.

All plumbing, heating and other pipe lines are made from architects' detail drawings and are brought to the operation in sections prepared at the various shops. The architects in charge of the erection of these houses are Sturdevant & Poggi, of Wilkes-Barre, Pennsylvania.

Safety-First Provisions at an Anthracite Colliery

BY D. C. ASHMEAD

Tarrytown, N. Y.

SYNOPSIS—A number of dangerous crossings around a colliery were eliminated by the construction of a subway. Trestles are protected by railings.

THE Mineral Springs colliery of the Lehigh Valley Coal Co., at Wilkes-Barre, Penn., has finally succeeded in eliminating a number of dangerous track crossings that were a serious menace to the life and limb of its employees, who were required to pass over them on their way to and from the plant. Before the changes covered in this article were made, the empty cars from the buggy plane ran to the hoisting shaft along a track laid on top of a low wall, the loaded



FIG. 2. IRON FENCE ACTS AS SAFETY MEASURE

the men now pass under the tracks of the upper level by means of a subway. (See Fig. 1.)

At the lower entrance to this subway, as shown in Fig. 2, an iron fence was erected to prevent the men from immediately crossing the tracks, upon leaving the tunnel. The distance the men have to walk before reaching the end of the fence enables them to see far enough in any direction to enable them to keep out of the way of moving cars.

The only track that the mine worker is now required to cross is the one on which the loaded cars run from the shaft to the buggy plane, and at the point where the crossing is made the men have a clear view of 250 ft. in each direction. As an additional precaution, a car retarder is operated by a man at the foot of the plane. It can thus readily be seen that the only way in which a man can get hurt while crossing the tracks is if he deliberately walks into the way of moving cars.

The tracks on all the trestles at this mine are protected by iron railings, as is shown in Fig. 3, thus mak-

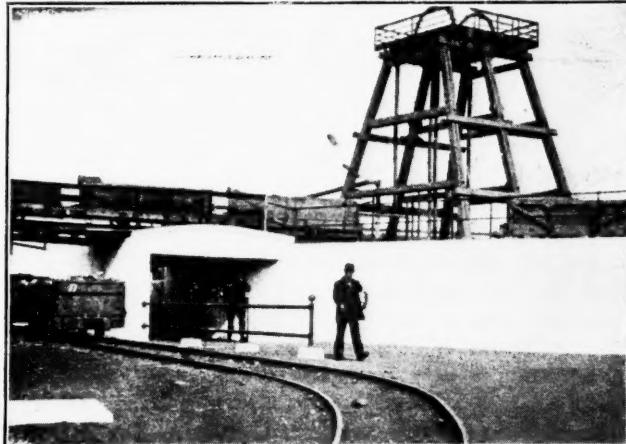


FIG. 1. SUBWAY UNDER TRACKS OF UPPER LEVEL

cars coming from the shaft to the foot of the buggy plane on a track that ran alongside the wall.

This arrangement proved to be extremely hazardous, as the men, when leaving the plant, would cross the different tracks from the man shaft on their way to the entrance to the colliery and, coming to this low wall, would jump from it, instead of making use of a flight of steps that had been provided. In this way one man was seriously injured by coming in contact with a loaded car running along the track on the other side.

To eliminate this hazard, the company built a new high concrete wall, thus raising the track for the empties, and on top of this wall erected an iron pipe fence 3 ft. high. The wall cannot readily be scaled, and

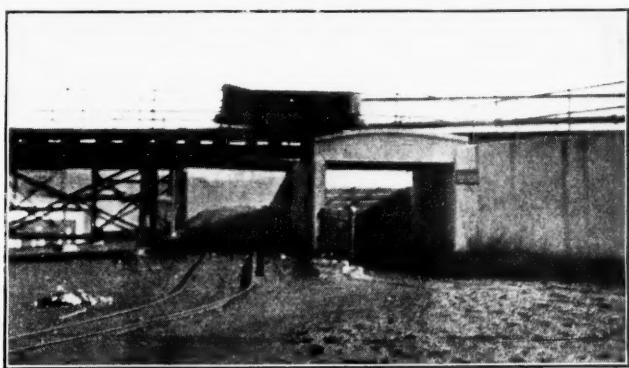


FIG. 3. IRON RAILINGS PROTECT MEN ON TRESTLES



FIG. 4. SAFETY SIGN AT COLLERY ENTRANCE

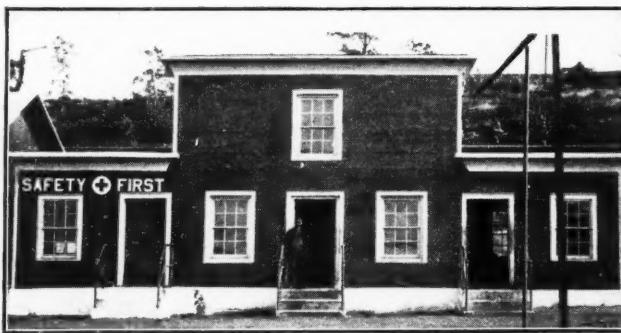


FIG. 5. SAFETY-FIRST HOSPITAL

ing it impossible for a man to step off the trestle when getting out of the way of the cars.

On entering the gate to the colliery, one is immediately arrested by the sign "Safety First—Always Be Careful," which is prominently displayed on the retaining wall at the side of the engine house of the breaker, which is almost at the head of the stairs leading up the hill to the shaft. (See Fig. 4.)

A view of the safety-first hospital is shown in Fig. 5. This building is located conveniently to the hoisting shaft and the carpenter and blacksmith shops, and at a point nearest the place where most of the accidents are likely to occur. The equipment of the hospital is modern in every way.

MINECDOTES

The Accident to Jim Flowers

The day before had been one of those blue days. Cars jumped the track, one machine was down, two machine runners were off sick, the compressed air was full of water, and the blacksmith failed to get enough bits sharpened.

The mine boss came out of the mine about 10 o'clock, preceded—in fact completely surrounded—by a deep sulphurous haze. Finding the object of his search, the

master mechanic, he commenced a gas attack of extreme intensity, telling him what he thought of his abilities as a shop foreman in particular and giving him his personal opinion of the efficiency of the whole mechanical department in general.

The master mechanic took it all in good grace, but mentally made a resolution that if every dog—even a master mechanic—has its day, his time would come; and when it did—look out.

His opportunity occurred much sooner than he expected. When the mine boss was in the office the next day, getting some reports, the master mechanic was near the surface phone and got the message from underground that Jim Flowers had been caught between two cars and had his leg smashed. He was being sent up on the next cage, and would he see to having him taken care of. The master mechanic said he would, and rushing over to the office, he called to the mine boss: "Man hurt. Coming up on next cage."

"Who is it? Is he hurt bad?" asked the mine boss, anxiously, jumping up and leaving for the shaft.

"Don't know who it is," answered the master mechanic, "but they said his leg was caught between two cars and smashed to splinters."

"Good God," said the mine boss, turning pale. "That's awful."

On reaching the shaft, the mine boss sent for the doctor, got the stretcher out, sent for the first-aid corps and procured a piece of wire to make a tourniquet. He did all this and still more, meanwhile pacing up and down nervously.

The injured man was finally loaded, and the cage rose slowly to the surface. The man had been placed in an empty car. He was crouched in a corner and with him there were four other men, to lift him out.

The car was rolled off the cage, and the mine boss and the doctor, who had arrived in the meantime, went over to examine him.

The master mechanic had told the truth all right, the man's leg was badly smashed, but he had taken great pains to omit the fact that the man was Jim Flowers and that the leg happened to be his artificial one. Jim sat very calmly in the car with his leg unstrapped, the broken pieces dangling ludicrously across his lap.

The look of disgust and chagrin which the mine boss gave the master mechanic was met with a broad and happy grin.

"All right," said the mine boss, laughing in spite of himself, "the joke is on me. But say, dog-gone you, how do you like this one?" And winking at the doctor, he pulled out his order pad and wrote as follows:

SHOP ORDER No. 72

Master Mechanic—Please have broken leg of Jim Flowers given the proper surgical attention.

[*Coal Age* will pay for and publish anecdotes such as the foregoing, provided the stories are of the mine and have the proper coal-mining "flavor." If they point a moral, so much the better. Dig down into your experiences and share with the many readers of *Coal Age* the humorous incidents you have witnessed in your duties around the mine, whether it be above or underground. The shorter and wittier these stories are, the more chance they stand of being published.—Editor.]

THE Workmen's Compensation Law of Pennsylvania marked a high spot in the advancement of the industries of the state. To most of the large employers it meant a radical change in their methods of dealing with injured employees and afforded a means of learning the actual loss in productive power due to industrial causes to which heretofore they gave little or no consideration.

The change is more marked in anthracite mining than in any other field of industry. The cause is evident. The work is more hazardous, and the very nature of the employment tends to a greater number of both serious and fatal accidents. Before the passage of the act, a few of the larger companies had a system of relief which, in some instances, compared favorably with the present conditions of the law. The main difference was that the employees stood for part of the expense by regular monthly contributions, the employer paying the remainder. Many localities had a system whereby the employees paid a monthly instalment to a doctor, usually \$1, for which they received for themselves and their family all the medical and surgical treatments necessary. This relieved the dread of expensive medical bills, a thing too often met among the families of our workers.

The amount received by the injured employee varied, though it was generally 50 per cent. of his weekly earnings with a monthly maximum of \$50, limited to six months plus a stipulated sum for funeral expenses. The waiting period was six days, and if incapacitated for that time his benefits dated from the day of injury. As the men contributed a share of the fund they considered it their right to enjoy its benefits without interference.

WORKERS TRY TO GET ALL THEY CAN

In time this attitude grew until there was always a number who deemed it their duty to get out of it many times the paltry sum paid in. This condition developed until these men were resorting to all sorts of subterfuges in order to receive the benefits, whether injured at work or not. Many of their efforts were humorous, while others were ingenious to say the least. The stories told were so plausible that it was extremely hard to detect the fakir. Besides the laxity of the system made it easier, for any who wished, to take advantage of the conditions.

The money paid now in compensation comes entirely from the employer, as there are comparatively few large coal companies that do not carry their own insurance. This has caused a more rigid scrutiny of injuries and more observing methods by the doctors in order to detect malingering. With it all, however, some of the less conscientious have found means of defeating the system, owing almost entirely to the interpretation of the compensation law by the various referees and the state board.

Under the old system, the most common cause of malingering was a sprained back. This is the one bugbear all had to watch. There is generally no real evidence of a sprain, a man's word being the only thing to rely on in many cases. Sciatica is often "panned" off

MALINGERING

BY F. S. RIORDAN

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for a sprain and is one of the first things looked for when there is a shadow of suspicion. Men who are members of one or more fraternal and beneficial societies are often as well off idle as working, so far as their income is concerned. These are the hardest to get back at work. They can always claim a weakness if they have to stoop at their work, and some of them are clever enough to make it next to impossible to detect the malingering. One of these cases remained on the fund for nearly six months, claiming he was unable to do any work. He finally resumed, and in a month's time contracted lobar pneumonia, from which he died. His friends did all they could to collect the death benefits, stating that he was returned to work too soon, when in reality if he ever had a strain it was trivial, and a couple of weeks at most would have been sufficient for a complete recovery.

HOW THE GAME IS WORKED

One chap attempted to kill a goose one evening. The ax slipped, and instead of cutting off the goose's head the man chopped off his thumb. He tied it up and went to work the next morning, and in the course of an hour reported that while cutting a wedge he had accidentally cut off his thumb. He was reported on the fund, and for three weeks everything went well without the slightest suspicion. As in all such cases, envious neighbors reported to the authorities the real facts. When confronted with the evidence he admitted the whole thing.

At a wedding celebration one night, one of the guests fell over a banister and broke a couple of fingers. He went to work as usual the next morning, and shortly after starting he reported the accident as having occurred while entering his place. He was in a fair way to getting away with the story when one of the fellows who saw the real accident reported the actual facts, which were also admitted.

In another instance an employee accustomed to overindulgence got thoroughly drunk one pay night. Upon arriving home, he discovered the door locked, and not caring to have the people at home realize his condition decided to climb in through the window. In trying to do so he fell, dislocating his shoulder and fracturing his collar bone. In spite of the intense pain he reported for work as usual, and in the course of an hour came out and said he fell down the chute, causing the injuries. As there were no witnesses to the accident he received full benefits during his disability. It was a long time afterward, in a spirit of confidence brought on by too many glasses, that he revealed the real story.

NEEDED A VACATION SO HE PLAYED SICK

Another case which was a standing joke in the community was the old sprained-back stand-by. This man, a very able and willing miner in his youth, decided he was entitled to a vacation and reported that he had sprained his back while lifting timber. He was idle so long that the case looked suspicious and was classed as one of malingering. Nothing could be proved, however, until one morning the doctor had a call to this employee's neighbor. On going out, the doctor found the old fellow diligently running the washing machine for his wife, and, of course, put him off the fund. He

became very indignant, and remarked that it wasn't so much being put off the fund that he objected to, but that it "hurted his dignity." The real truth was that if he was injured at all it was nothing more than his dignity, which, of course, he might have carried in his back.

The most notorious case was that of a foreigner who, in some mysterious manner, shot himself in the finger, the bullet lodging at the base near the knuckle. He reported to the foreman that a lump of rock fell on his hand when he was getting upon a car. He told a very plausible story, as did several men who were working near him. All maintained under the closest questioning that he received the injury in the manner described. The man was idle for months. Still the finger refused to heal. It was finally decided to amputate, and when the finger was taken off the bullet dropped to the floor. This man paid back in regular installments the full amount he had wrongfully received. It has never been learned how the bullet got there, as his stories were all conflicting and impossible. He is still working at the same place, though any future reports of injury will be scrutinized closely.

These cases all happened under the old system, before the State Compensation Law went into effect. While it is true that it is now more difficult for the malingerer to succeed, yet the experience gained before shows what to expect in the future. There is no denying the marvelous good being accomplished by the present law, yet it is far from perfect. The men administering the act are capable, broadminded men and have in all cases been governed by a spirit of fairness that is admirable; yet their desire to safeguard the worker has led them to make rulings, which, while ordinarily sound, leave a loophole through which the malingerer can often take advantage.

The interpretation of the term "injury" as defined in the act—"any physical violence to the body and such disease or infection as results therefrom"—has opened a broad field and unconsciously has led to the paying of compensation for occupational diseases in many instances, while it was the express purpose of the legislature to exclude them.

It is common for old miners to be afflicted with "miner's asthma," which naturally results in an enlargement of the heart. The reason is simple. The lungs being clogged with coal dust, the heart has to work harder to force the blood through. This naturally results in a development of the heart muscles and what the doctors term "pericarditis." If the disease is of long standing, a severe cold may break down the lung structures and the man's condition may become serious. He can naturally feel his condition getting worse, and to safeguard himself can report a sprained back, chest, etc., or even if the sprain is a reality he can insist that he is unable to work. It is impossible to say he is considering his physical characteristics. Under the decisions, his condition was aggravated by the injury and he is entitled to compensation. While it is true each case must stand on its merits, yet occasionally one will slip by, no matter how carefully watched.

There are other conditions which lead to the same results. Apoplexy is a common cause of controversy. If the stroke happens at work, it is laid to the excessive strain the employee was called upon to undergo in the

course of his employment. The real cause may be an inherent weakness and often the result of an insidious and loathsome disease. This also may affect the joints. A slight twist of the ankle or a bump is often sufficient excuse for months of idleness. The eyes also may be weakened and a splash of water all that is necessary to put a man on compensation and perhaps pay for the loss of an eye.

It surely takes a far stretch of the imagination to trace the results of some of these conditions to the trivial accidents sustained, and the reasoning which concludes they are compensable for the period of disability is certainly fallacious.

The average employer is more than willing to pay for all legitimate injuries sustained. It is only when conditions such as those cited arise, and they are held responsible for conditions over which they have no control, that they show any spirit of resentment. Time will, no doubt, remedy these evils, but until it does such cases will always leave a feeling of dissatisfaction.

Bureau of Mines Broadens Scope of Urbana (Ill.) Experiment Station

The United States Bureau of Mines recently has broadened the work of its experiment station at Urbana, Illinois. It will be headquarters for the bureau engineers working in the Central States coal region. It is proposed to continue the work already established in regard to safeguarding life among employees, improving conditions in mining and preventing unnecessary waste of resources, and to enter more fully into the investigative side of the work and the publication of results, in both the mining and metallurgical industries of this region.

The present coöperative agreement with the University of Illinois, through its mining department, and with the Illinois State Geological Survey has been renewed. By this, it is possible to secure the combined services of engineers, geologists and metallurgists for problems concerning the mining and metallurgical industries of Illinois and in publishing the results of their studies. The bureau is given offices and the use of the laboratories and libraries at the University. As a result of the coöperation during the past four years, results have been published of many studies concerning coal resources, mining practice and mining conditions in Illinois. New work concerning mining practice and utilization of the Middle West coals in coke and gas manufacture is under way.

E. A. Holbrook, formerly professor in the mining department of the University of Illinois, has been appointed supervising mining engineer and metallurgist with the bureau, and will act as superintendent of the station.

W. B. Plank, formerly assistant engineer of the bureau at Pittsburgh, has been appointed mining engineer in the mine-safety section, and will have headquarters at the station. The Bureau rescue car No. 3 at Evansville will be under his charge.

F. K. Ovitz, chemist, will continue from the station his studies regarding the more general use of the coals of the Middle West for coking and gas manufacture.

Alice E. Carkuff, of Cairo, Ill., has been appointed clerk and stenographer.

Economical Generation of Thermal Power at Coal Mines—II

By J. B. C. KERSHAW

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ALL the water found on this earth has at one time or another passed through Nature's great system of circulation, and has been distilled as aqueous vapor by the heat of the sun's rays, from the surface of river, lake, swamp or sea. At some period of its history, therefore, the most impure water has been perfectly free from all dissolved and suspended matter. The impurities now found in it have been picked up in the course of its meanderings over the earth's surface, or during its percolation through the earth's strata.

These impurities, from the steam user's point of view, may be grouped in two broad classes—namely, scale-forming and nonscale forming; or corrosive and non-corrosive. The common scale-forming salts are calcium and magnesium carbonate, and calcium and magnesium sulphate. To these may be added silica, since this is found as an ingredient of some very hard scales. The corrosive impurities are free acids, carbon dioxide gas, oxygen and chlorine—these latter gases being liberated in the free or "ionized" condition when water containing them either in the free or combined state is heated much above its boiling point in the presence of certain catalytic agents. In fact water is quite a good absorbent for gases, and nearly all surface and well waters contain large amounts of dissolved carbonic acid and oxygen.

Unless proper precautions are taken these dissolved gaseous impurities may cause pitting and corrosion around the inlet to the boiler. Water drawn from the neighborhood of peat deposits and boglands may also contain organic acids, which are likely to cause trouble in the boilers unless neutralized before the water is used. Finally, there is the most dangerous impurity of all—namely, oil—which may find its way into the feed water for boilers owing to defects in the construction of, or faults in operating, the condensing plant. Scale containing oily matter has been the cause of innumerable furnace collapses in boilers, for this scale is almost nonconducting as regards heat, and it usually settles and sticks on the hottest part of the furnace crown.

METHODS OF TESTING WATER

The methods of testing water for its gaseous and other impurities are somewhat outside the scope of this article, and the mine manager, if wise, will rely upon the aid of an expert analytical or consulting chemist when he requires his feed water supply examined. A few general hints, however, may be given here.

The samples of water should be collected and stored in glass bottles provided with glass stoppers. It is well, also, to fill two bottles at one time and to keep the second in reserve, in case of accident to the first. The only tests that can be safely made by the manager or his engineer are those for alkalinity, acidity and oil.

Books of neutral litmus paper in strips can be bought from the dealer in chemicals, and by noting the change in color produced when a slip of this paper is immersed

THE water supply for the boilers in mining power plants is only second in importance to the fuel. In many cases the troubles arising from leaky boilers and boiler fittings, and from the low efficiency of the steam-raising equipment, are directly attributable to the unsuitability of the water used for feeding. In this article, the naturally occurring impurities of water, the testing of water and the purification thereof are dealt with briefly; and in the final section some examples of the treatment of mine-drainage water, in order to render it fit for use in the boilers, are given.

in the feed water some idea can be gained of the character of the water supply, or of the efficiency with which the purifying plant is being operated. Litmus turns blue with alkalies and red with acids. Under good working conditions the natural or artificially softened water should show a slightly alkaline reaction.

If it should be desired to institute a more reliable test of this kind, a strong solution of litmus should be procured in lieu of the litmus papers, and also a tall cylindrical jar 10 in. in height by 2 in. in diameter. This jar is filled with the feed water, 10 drops of the litmus solution are then added by means of a pipette, and the results are noted down. If the test is always repeated under similar conditions, a useful check can be made on the alkalinity or acidity of the feed water.

LITMUS AND PHENOL-PHTHALEIN AS INDICATORS

Litmus, it must be remembered, however, does not change in color with some of the organic acids, and when the presence of these is suspected, one of the synthetic dyes now used as indicators (phenol-phthalein or methyl-orange) must be substituted. Phenol-phthalein turns pink with caustic alkalies and colorless with acids, while methyl-orange gives a bright pink with acids and a yellow with alkalies. Both of these indicators give the best results when used in small amounts. Methyl-orange is not acted upon by CO_2 .

The test for oil is most easily carried out by heating on a platinum spatula to a red heat in the flame of a Bunsen burner, some of the scale taken from the crown. If charring occurs and an unpleasant odor is produced, one may safely judge that some organic salts are present, due to oil in the feed water.

This test can be supplemented by taking one pint or more of the water and shaking it vigorously with 20 c.c. of petrol-ether (gasoline) in a stoppered separating funnel provided with a glass run-off cock. The petrol will dissolve any oils that may be present distributed in minute particles or globules through the volume of water. By allowing the water and petrol to separate, and by then running off the latter into an evaporating basin and exposing this to the air in a warm place in order to vaporize the petrol-ether, one can obtain the dissolved oil as a residue for further examination.

The method of testing for the amount of calcium and magnesium salts in water is more complicated and can only be carried out satisfactorily by a properly trained man. Clark's soap test was formerly generally employed for determining the "temporary" or "permanent" hardness of the water, but this is now being displaced by methods of greater accuracy. "Temporary" hardness, it may be explained, is that due to the presence of calcium and magnesium carbonates in the water, while "permanent" hardness is that due to the presence of the sulphates and chlorides of the same two elements.

The Clark degree of hardness is based upon the number of grains of calcium carbonate per gallon—one Clark degree being equal to one grain of calcium carbonate (CaCO_3) per gallon. This method of expressing the results of water analyses is, however, an arbitrary and unscientific one, and it is now more customary to express the results in parts per 100,000 or parts per million. Since one imperial or British gallon of water weighs 10 lb. and contains 70,000 grains, the Clark degree of hardness must be multiplied by $\frac{1}{10}$ or 1.43 in order to obtain the parts of CaCO_3 per 100,000; and *vice versa*, the parts of CaCO_3 per 100,000 must be multiplied by $\frac{1}{1.43}$ (0.70) in order to obtain the degree of hardness by the Clark scale. In calculating in American units it should be borne in mind that the American gallon weighs 8.335 lb. and contains 58,345 grains.

PRINCIPLES OF WATER SOFTENING AND PURIFICATION

Thin scale upon the interior of the boiler is of some use as a protective coating, for it better enables the steel to resist pitting and corrosion. But after this coating has passed $\frac{1}{16}$ of an inch in thickness it is a serious hindrance to effective boiler operation, for the heat-conducting power of scale is estimated by various authorities to be only $\frac{1}{10}$ to $\frac{1}{15}$ that of clean boiler plate. The rate of heat transfer through the boiler plates is thus enormously diminished with the increase in thickness of the scale. As already stated, an oily scale is the poorest heat conductor of all, and therefore the question of boiler efficiency is largely one of keeping the interior of the boiler clean and free from thicker deposits of scale than the $\frac{1}{16}$ in. named above.

Taking the impurities of feed water in the order of their danger to the life and efficiency of the boiler, we have to consider: First, the removal of oil; secondly, that of the gases and salts producing pitting and corrosion, and thirdly, that of the salts producing scale.

Oil may be removed by filtration or by coagulation. In most cases the oil is too finely divided (or emulsified) in the water to be separated by mere sand filtration. It is consequently necessary for the small globules of oil to be coagulated by chemical action before they can be removed. In such cases, therefore, the condenser or hot-well water which is the carrier of the oil, after being subjected to a preliminary filtration, should be passed through a purifying plant in which ordinary hard water is being softened by the use of lime. The calcium carbonate which forms in a flocculent condition as a result of the chemical reactions taking place in this plant will then inclose and carry down with it the particles of oil suspended in the water. Where no such plant is in operation, it will be necessary to install one of the patented processes for coagulating oil particles, depending either upon chemical or electrical treatment.

The impurities causing corrosive action in boilers are either free acids or the gases carbon dioxide, oxygen or chlorine, produced in the nascent state inside the boiler as a result of catalytic action and the high temperature. The presence of free acids is unusual and should only occur in the case of drainage from mines being used as make-up for the feed, or in the case of water drawn from bogland. The remedy is to kill the acid by neutralizing the water with carbonate of soda (soda ash) or caustic soda. Caustic lime and limestone can be used also for this purpose, in a tower or cascade, but a chemist would be required to control the work, as their reaction with the acids would be slow and possibly intermittent. Some notes upon his method of neutralizing the acids in mine-drainage water are given in the last section of this article.

The gaseous impurities of water are most simply got rid of by raising all the feed water to 200 deg. F. or over before it enters the boilers. This plan of pre-heating all the water supply possesses other advantages, which will be discussed in the next article of this series when dealing with the thermal efficiency of boilers. Should this preliminary heating be carried above 212 deg. F. outside the boiler, it will be necessary to provide means for trapping and releasing the gases which will collect at the highest point of the economizer, pipes or storage vessels as a result of this preheating.

Scale-forming impurities may be removed also by pre-heating, but the use of chemicals is required if the sulphates or chlorides of lime and magnesium are present in the water. Calcium and magnesium carbonates which cause the temporary hardness of water are only slightly soluble in pure water, but in water containing carbon dioxide (CO_2) they dissolve readily, owing to the formation of soluble bicarbonates. If, however, water which contains these salts in solution be boiled, the CO_2 escapes as gas, and the carbonates separate out as a flocculent precipitate which only becomes granular after prolonged boiling.

WATER TREATED WITH MILK OF LIME

Boiling is therefore one method of removing the carbonates from water, but as this would be troublesome if carried out on a large scale continuously outside the boiler, the more usual plan is to treat the water with milk of lime. Calcium hydrate ($\text{Ca}(\text{OH})_2$) has a great affinity for carbonic-acid gas, and when brought into contact with the bicarbonates of lime and magnesia it robs the latter of their extra CO_2 molecule and causes the two carbonates to be precipitated exactly as before by boiling. The carbonates of lime and magnesia (the temporary hardness) are therefore easily removed. The corresponding sulphates are more troublesome.

The usual method of removing these salts is by use of caustic soda (NaOH) and soda ash (Na_2CO_3). On heating solutions of these various salts together in the right proportions, what chemists call a "double-decomposition" occurs. The calcium and magnesium sulphates are converted into the corresponding carbonates, and sodium sulphate remains in solution. When magnesium salts are present in large amounts, as is often the case in mine-drainage water, a large excess of lime must be used in the purifying plant, otherwise some of the magnesium salts will remain in the soluble form and will get into the boilers.

The foregoing are the chemical principles upon which the majority of the systems and apparatus for water purification for boiler purposes are based. The essential requirements of a successful water-softening apparatus are: (1) Accurate chemical treatment based on a reliable analysis of the water; (2) thorough mixture of the chemical reagents and the water; (3) time for the chemical reactions to complete themselves in the large volumes of water dealt with; (4) time for sedimentation to occur.

As regards (3) and (4) it will be found that heating the water not only accelerates reaction but also sedimentation. All waters testing over $12\frac{1}{2}$ deg. of total hardness by Clarke's test, or over 18 parts of calcium and magnesium carbonates and sulphates per 100,000 parts of water, should be submitted to purification.

The intermittent system, in which the necessary amounts of the chemicals required are added to the water in two or more large tanks, is the most efficient and cheapest, and is to be preferred to the so-called "automatic" systems. Whichever system be adopted, however, the process of water purification demands constant and intelligent attention, in order to guard against the waste of chemicals and the escape of scale-forming impurities into the boilers. These frequently occur when the plant is left in charge of untrained men.

THE CHOICE OF WATER FOR FEED PURPOSES

The water which is to be used in boilers cannot be too pure, and the popular idea that rain water or condenser water is corrosive in its action upon boiler plates in consequence of its purity is erroneous. The corrosive action which is sometimes observed with these waters is due to the dissolved gases or other impurities which they have picked up from the air. Rain water which falls in manufacturing districts is often contaminated with calcium and magnesium salts in large amounts, taken up and dissolved during its fall through the dust-laden air of the locality. Wolff, in a paper read before the Manchester (England) section of the Society of Chemical Industry in 1912, has given figures showing that in the neighborhood of Manchester rain-water samples collected directly from the air often tested over 100 deg. of hardness by Clarke's soap test.

It is therefore unwise to use any water for boilers without previous chemical examination and determination of the character and amount of its dissolved impurities. This chemical examination ought to be repeated at frequent intervals, since the amount of impurity in the water changes rapidly and is much influenced by the rainfall.

Every boiler installation ought also to be equipped with a purifying plant which, when required, can be put into use at a moment's notice. As a general rule, if any choice in the matter exists, it is best to use a water which is not badly contaminated with dissolved calcium and magnesium salts and to pass this through the purifying tanks if the total hardness exceeds 18 parts per 100,000. The reason for preferring a water that is not badly contaminated is that the treatment with lime and soda, while it removes the scale-forming calcium and magnesium salts, and precipitates them in settling tanks, substitutes therefor an equivalent amount of sulphate of soda. Although this salt is very soluble, its accumulation in the boiler will cause trouble.

It is for this reason that the use of mine-drainage water for boiler-feed purposes is unwise, if any alternative supply be available. Mine-drainage water is heavily charged in most cases with calcium and magnesium salts (especially sulphates and chlorides), and the chemical treatment of this water leaves large amounts of sodium sulphate and chloride in the softened water.

An interesting legal case which came before the Vice-Chancellor's Court of the Duchy of Lancashire in 1915 hinged upon the question as to whether a softened water, obtained from a brook into which mine drainage was pumped, was the cause of the pitting and corrosion which had occurred in boilers fed from this same brook at a lower point in its course. This water, after its purification, contained on the average 700 parts of dissolved salts per 100,000, chiefly in the form of sodium sulphate and chloride. The experts who appeared for the plaintiff companies (a group of cotton mills) asserted their belief that this water was the cause of the trouble and was quite unfitted for use for boiler-feed purposes. The case ended in favor of the plaintiffs, who obtained an injunction against the further contamination of the brook with mine-drainage water, even when chemically treated.

However, it may be necessary at times to have recourse to mine-drainage water in order to reinforce a diminishing supply from the ordinary source, and the two examples given below, both taken from recent issues of *Coal Age*, show what can be effected in this direction.

PRACTICAL EXAMPLES OF THE PURIFICATION OF MINE-DRAINAGE WATER

The first example is that of the United States Coal and Oil Co., of Holden, W. Va., which draws its supply from three sources—wells, a small creek and from the mine drainage. The intermittent system of treatment, already recommended in this article, was adopted, and it is stated that since the plant has been in operation, a saving has been made amounting to 15 per cent. on the fuel bill. Frequent cleanings or renewals of boiler tubes also have been rendered unnecessary.

The plant consists of three large reaction and settling tanks equipped with mechanically operated stirring devices, a reagent mixing tank and a gravity filtering bed. The *modus operandi* is simple. While one tank is being filled and treated with the chemicals the second is settling, and the third is being siphoned off through the filter bed for use. Further details of this plant will be found in *Coal Age* for May 27, 1916.

The second example of the purification of mine-drainage water relates to a threatened stoppage of the majority of the collieries in the southern anthracite field, owing to a prolonged and severe drought, and to the success of a system of softening introduced by E. M. Chance. The method adopted was again that of treatment with lime and soda in tanks worked upon the intermittent principle, but in this case either exhaust or live steam was employed for preheating the water, in order to obtain a more rapid chemical reaction and quicker settling of the precipitated lime salts.

The water was first heated to 150 deg. F. Slaked lime was then put into the tank, and the whole contents were vigorously agitated until a permanent pink color was obtained by the phenol-phthalein test applied to the

filtered water. This preliminary treatment was designed to neutralize the free sulphuric acid, of which the water contained large amounts. After the lime a calculated amount of soda ash was added to the tank, and the contents were again agitated and then run into one of the lower-placed settling tanks. A period of three to four hours was allowed for settling, and the softened water was then run off by means of a hinged siphon tube and was ready for use. The following are analyses of the untreated and treated water:

PARTS PER 100,000			
	Before Treatment	After Treatment	
Total acidity	120	Nil	
Free sulphuric acid	10	Nil	
Total solids	200	250	
Total sulphate (as SO_4)	150	130	
Iron and Al_2O_3 , mica (Fe_2O_3 , Al_2O_3)	50	4	
Lime (CaO)	20	4	
Magnesia (MgO)	20	4	

Although the total solids were still high, due to the presence of large amounts of sodium sulphate, the water could be used without damage to the boilers. As over twenty collieries were affected by the shortage, and the mean daily consumption of water was over 120,000 gal. per colliery, this emergency purification and use of a badly contaminated water supply was quite justified under the circumstances. The chief difficulty met with in the use of this water was that it foamed badly, and it was found necessary to blow off the boilers frequently in order to avoid priming. Further details of this plant will be found in the issue of *Coal Age* for Apr. 7, 1917.

In conclusion I would state it is my opinion that owing to the high pressures now customarily used in

modern steam-engines and boilers the question of the comparative purity of the feed-water supply is of paramount importance. Practically all the dissolved impurities of feed water, not alone the scale-forming salts, are injurious to the boiler plates under the conditions of temperature and pressure obtaining inside the modern boiler. In time I believe that stationary boilers and engines will be worked like marine boilers, with surface condensers and special evaporators to provide for the make-up, and that all soluble salts, including the sodium salts formed by the ordinary softening process, will be kept outside the boilers.

Until this time arrives, however, every colliery boiler plant ought to be provided with the necessary tanks and equipment for treating the whole of the water supply with chemicals, on the intermittent plan when necessary; and arrangements ought to be made for the boiler feed water to be examined by some competent chemist at short intervals

(To be continued)

PART OF A LAW enacted at the recent session of the Oregon legislature reads: "Coal shall be sold by the ton or fraction of a ton; . . . and in all sales of firewood, coal or ice a definite statement shall be made to the purchaser as to the amounts or quantities thereof. . . . In all shipments of coal received within this state, in carload lots containing 25 tons or more, the net weight of the coal at the destination point shall govern, unless expressly contracted for otherwise."



Reflectively He Rubs His Jaw

Propound a plain, straightforward quiz, and notice what his answer is. Does he come boldly to the scratch and with succinctness and dispatch proceed to state his honest thought? Nay, trustful mortal, he does not! Reflectively he rubs his jaws; he gives a grunt; he hums and haws; he gazes with a vacant stare off through the depths of limpid air, and pulls a silly simper that outdoes the famous Cheshire cat.

Responsibility he shuns; when it arrives, he turns and runs. He quails and quakes when asked to write opinions down in black and white. As well expect to tame a flea as get the facts from such as he, because he either doesn't know, or if he does, won't tell you so. And when at length he gets your goat, you yearn to take him by the throat, and crack his skull to see if brains or addled eggs the thing contains.

THE SIDE-STEPPER

By RUFUS T. STROHM

You may have noted, now and then, among the surging hosts of men, the chap afflicted with a lack of spinal column up his back. In place of that substantial thing he seems to wear a piece of string. He never has decided views on any subject you may choose; he always answers with "I guess" in preference to "No" or "Yes," or gross uncertainty he shows by overworking "I suppose."

The man's reluctance to begin wears down your patience till it's thin; yet still you meekly stand and wait in hopes that he'll articulate. But when he opens his mouth to speak, he might as well be talking Greek, because the words his lips let fall do not explain the point at all. They fail to show a single trace of knowledge that could fit the case, but drift and ramble, shift and veer from there to yon and back to here.



Responsibility He Shuns

Coal Stripping in Georges Creek Region

The comprehensive review of the stripping of bituminous coal compiled by H. H. Stoek, for the American Institute of Mining Engineers and published in *Coal Age* of Sept. 29, omitted all reference to the Maryland stripings. The stripping of coal in Alleghany County, one of the westerly counties in the state, has now become an industry of importance and is likely to have further growth. A number of steam shovels are at work uncovering the coal, which is from 12 to 14 ft. thick. The cover in a large area of the country runs between 20 and 50 ft. When the beds are no deeper than this, the roof is apt to be quite weak, and underground mining is not possible without expensive timbering.

For this reason shovels, mostly of the Marion Steam Shovel Co.'s make, have been installed. Already about 500 men are employed in the pits. The work is conducted in three 8-hour shifts. The steam shovels are uncovering 8 to 10 acres a year per shovel where the cover does not exceed 30 feet.

The average thickness of the cover removed is roughly 35 ft. In some cases it does not exceed 9 ft., and in places reaches 40 ft. The Georges Creek Coal Co. has some of the largest steam shovels made, and it proposes



DINKEY ENGINE AND CARS USED IN HAULING

to strip in places to depths of 50 ft. The cover is not hard to excavate, as it consists wholly of clay and soft shale. As the coal bed contains about 19,000 tons per acre, with coal at \$2.25 per ton the output of a single acre is approximately \$42,750, justifying quite a considerable outlay.

The coal is "shot" from its upper surface by holes placed a few feet back from the face. In many cases the shooting progresses with the work of the shovelers, who are on hand as soon as the coal is broken by the blast. The coal is conveyed in mine cars drawn by "dinkey" engines to a tipple erected along the railroad, and there it is dumped.

The wages paid under the recent wage increase average about \$4.50 per day of 8 hours. Water boys receive as much as \$3.25 per day, blacksmiths \$5.25, and most of the men receive from \$4.50 to \$5.50 per day. Recently the United Mine Workers of America has organized locals in this field, but the union has not so far succeeded in obtaining any general organization though it has managed to start several strikes.

Odd Variations in American Coal

Certain coals, especially English coals, contain chlorides. These chlorides seem to affect the brick ovens and clay retorts used in the manufacture of coke and illuminating gas. A series of analyses for this constituent and also for organic sulphur and carbonate carbon has been made. In the coals tested thus far only traces of chlorine have been found. Organic sulphur, however, is a rather general constituent of American coals, in some of which it comprises half the total sulphur. Carbonate carbon is generally present in largest amount in the coals from the interior field, Illinois, Indiana, Missouri and western Kentucky—*Year-Book of United States Bureau of Mines*.

Worth the Cost of the War

I suppose not many fortunate byproducts can come out of a war, but if the United States can learn something about saving out of this war it will be worth the cost of the war; I mean the literal cost of it in money and resources. I suppose we have several times over wasted what we are now about to spend. We have not known that there was any limit to our resources; we are now finding out that there may be if we are not careful.—From President Wilson's speech to the War-Savings Committee.



SHOWING COAL AFTER SHOVEL HAD PASSED



MARION SHOVEL USED IN STRIPPING THE COAL

Who's Who In Coal Mining

E. C. Luther

When William Potter was appointed Federal fuel administrator for the State of Pennsylvania, one of the first things he did was to look around for an able man to assist him as coal expert, and he could not have made a better choice than he did in the selection of E. C. Luther, of Pottsville, Pennsylvania.

Mr. Luther is a man of broad experience, both in anthracite and bituminous mining. He is a son of the late R. C. Luther, for many years general manager of the Philadelphia & Reading Coal and Iron Co., and is a graduate of Princeton University, class of 1902, and Columbia School of Mines, '04.

He began his practical mining education with the engineering department of the Philadelphia & Reading



E. C. LUTHER

Coal and Iron Co., and was later appointed engineer for the Sheaffer and Gilbert Estates, which position he held for several years.

The death of his brother, R. Y. Luther, and the election of E. C. as managing director and, later, president of the Peerless Coal and Coke Co., a corporation founded by his father, and operating two large producing mines in the Pocahontas field, made it necessary for Mr. Luther to resign his position with the Sheaffer Estate. He opened an office as consulting engineer in Pottsville and divides his time between that city and the mines in West Virginia.

There are few men in the country who have given more of their time to patriotic work than has Mr. Luther. As secretary of the Patriotic League of Schuylkill County, and secretary of the Red Cross War Fund Committee, he has given liberally and entirely without compensation, not only his own time, but that of his office force as well; and much of the great success of all patriotic work in Schuylkill County is due to his efforts.

Mr. Luther accepted the position of "coal expert" under Mr. Potter, refusing any compensation for his work, and Mr. Potter is to be congratulated in securing such an able assistant.

Mrs. Luther, a daughter of the late Judge D. C. Henning, and a granddaughter of the late C. M. Atkins, is as active in patriotic work as is her husband, and is a recognized leader in the Red Cross work.

The Freight Rate as a Factor

It is well enough understood by the coal trade in general that the freight rate is a factor not only in determining the price of coal delivered at given points, but that it also enters to quite an extent into the question of success in mine operation. When one pursues this subject of freight rates as a factor in the mining and distribution of coal, however, one comes across some complications now and then which are rather puzzling and which raise the question if the freight rate is really a dominant consideration.

For example, there was recently a hearing before a member of the Interstate Commerce Commission at Louisville, Ky., on freight rates from western Kentucky points to more distant fields in the North and other parts of the country. The Kentucky operators filed complaint against the existing rates on the ground that they were unfair in comparison with rates granted to coal and other commodities in other sections. So far there was nothing unusual about the proceedings, but the hearing revealed something of a spirit of antagonism in the coal trade, or rather showed the existence of this spirit, because operators from intervening fields between western Kentucky and Chicago supported the side of the railroads and objected to freight-rate reductions from the Kentucky field on the ground that it would jeopardize some operators in the mining industry in Indiana and Illinois.

Logically, one might argue that the coal-mining interests are common interests and that the spirit or coöperation which has been engendered through various organization efforts would hold the coal trade together to make common protest against unfair treatment, no matter whether it involved legislation and regulation or railway freights.

One might argue, also, that surely all have a common interest in the general welfare of the coal industry and that this interest would lead to a unanimous voicing of support in any contention for fair and equitable railway rates.

It is a peculiar fact, however, that often the hard fight over railway rates is not so much between groups of coal operators in a given field and the railroads as it is a fight for advantage between different groups of coal operators entering into more or less spirited competition with each other in certain fields.

It is this spirit of antagonism rising between different groups of coal men, sometimes frankly expressed and at other times subtly concealed, which gives emphasis to the importance of the freight factor in the mining and distribution of coal.

In one way it is a strong argument in favor of the position taken by the fuel administrators that the needs of a given community should be served with coal from

the nearest fields. This not only means generally a saving in freight, but it shortens the haul and lessens the demand that is made on the transportation system of the country.

There are often other considerations which within reasonable limits should outweigh the factor of freight in the selling of coal, but in normal times when coal prices are low and competition is sharp it is easily evident that the item of freight may be a dominating factor. Moreover, it is often a fact that the selling organization with much knowledge and understanding of freight rates to different consuming points over the different roads has an advantage in selling coal over those less informed in this matter.

We may really get two questions out of this subject. One is, How prominent is the item of freight as a factor in marketing and distributing coal? The other question is, Has the trade been allowing the freight factor to become more prominent than it should?

SOME INTERVIEWS

This with One Who Had Been to Washington

I called at his office the day after he returned from Washington. He had been there in the interest of one of the mining companies, of which he is a stockholder and director, and for whom he acts as coal sales agent. The company's officials induced him to make the trip, thinking he might convince Dr. Garfield's committee that they were entitled to a better selling price for their coal. He is the best-posted man in our state in matters pertaining to cost sheets and the selling prices on coals both past and present, and he has his figures at his finger ends.

I wanted to give him a chance to make his subscription before the effect of the "war talk" he was bound to have heard in Washington should have lost its effect upon him.

"I guess one has to go to Washington to realize that we are at war," I ventured to remark by way of introduction.

"Well, you will realize it there all right, all right," he replied, "and you are more than apt to realize some other things," he continued, "especially if you are unfortunate enough to have an interest in the coal-mining game." The last remark was made with so much feeling that I clearly saw that I had touched a sore spot.

I hastened to assure him that I was interested in the coal-mining game myself, that in fact I earned my livelihood from it.

"Then don't go to Washington," he continued. "You will find out soon enough as it is some of the things the coal men are to have handed to them."

Just at this point in his conversation I recalled that some of his friends had told me he was bitterly opposed to unionism in any form; so bitter, in fact, that even some of the mine owners who knew him best classed him as an extremist. That relieved the tension somewhat, as I had about decided I was in the presence of a rank pro-German.

"Why," he continued, "if you go there to complain

about the way the union is trying to take advantage of conditions, you are more than likely to be ushered into the presence of some ex-union official with whom you have been at war from time immemorial; and after he exhausts your patience by treating you as if you were a sheep-killing dog, you are allowed the privilege of explaining your grievance or grievances to men who probably don't know the difference in cost between washed coal and mine-run."

The conversation had progressed far enough to convince me that no Y. M. C. A. subscription was forthcoming as the fruits of this interview, so I decided to draw this man out just to satisfy my curiosity even if it involved taking chances on getting out of his office alive.

"Were there many coal operators in Washington, while you were there?" I inquired.

"Yes, quite a number of them," he replied.

"And all were there for the same purpose?" I continued.

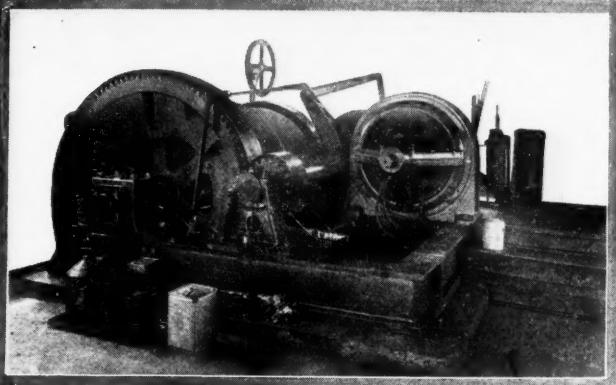
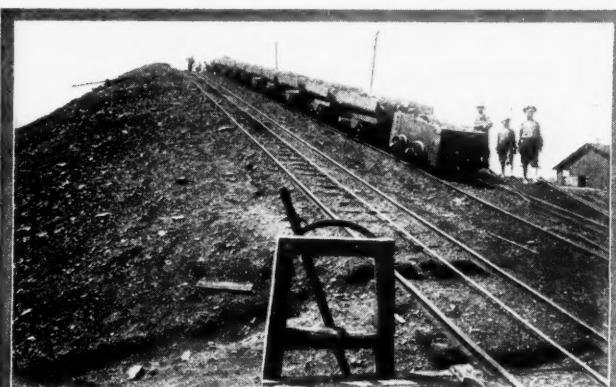
"Quite so," he said.

"Did you happen to meet, while there, a single one who was there solely to see if he could be of assistance to the Government?"

"Why, no; not if you exclude the ones who were originally appointed on the Peabody committees," he admitted. "I saw several of them hanging around; looks as if they are there to stay."

Our interview was brought to a close with that, as he had another appointment to fill.

I left him wondering if his failure to find a single truly patriotic coal operator in Washington was due to the fact that "birds of a feather will flock together."



CUNARD SLOPE, MORRISDALE, PENN.

Above—Double barney tailrope slope of the Cunard Coal Co. Below—Electrically driven backgeared hoist that drives the plane...



[Men of the coal industry who find it necessary to get to the national capital on business these days are invited to avail themselves of the facilities afforded by the Washington Bureau of "Coal Age," which is centrally located in the Metropolitan Bank Building. The bureau is in charge of Paul Wooton, who is in a position to be of material assistance to those who have business to transact with Government officials. Have your mail addressed care of "Coal Age," Room 703, Metropolitan Bank Building, Washington, D. C., while at the capital.—Editor.]

President Authorizes Rise in Anthracite

That President Wilson carried out to the letter the recommendations of Dr. Garfield in his order granting an increase of 35c. on anthracite was revealed by the President's order and the letter from Dr. Garfield, which was made public at the same time. The letter also contained the interesting information that the April reduction would be made as usual. The order increasing the anthracite price schedule as it emanated from the White House reads:

The scale of prices prescribed Aug. 23, 1917, by the President of the United States for anthracite coal at the mines, adjusted as to pea coal Oct. 1, 1917, by order of the United States Fuel Administrator, is hereby amended by adding the sum of thirty-five (35) cents to each of the prices so prescribed or adjusted; provided, however, that this increase in prices shall not apply to any coal sold at the mines under an existing contract containing a provision for an increase in the price of coal thereunder, in case of an increase of wages paid to miners. This order shall become effective at 7 a.m. on Dec. 1, 1917.

The following is Dr. Garfield's letter to the President on which the order was based:

The labor problem in the anthracite mines is not different in any material respect from that in the bituminous fields. Most of the comment in my letter of Oct. 26 is applicable to the anthracite situation. It is, therefore, unnecessary to repeat it here.

On Nov. 17, after a conference of about two weeks, the anthracite operators and miners reached an agreement, a copy of which I inclose.

In response to my request, the operators' association furnished statements showing in detail the tonnage and actual labor costs since the last wage increase, May, 1917, and the additional cost per ton if the increase of Nov. 17 is added. These figures were based upon an examination of over 68,000,000 tons or 85 per cent. of the total tonnage estimated for 1917. If the proposed wage increase becomes effective, the increased cost placed upon the operators will range from 26c. per ton to 56c. per ton. A small high cost tonnage shows additional costs per ton as high as 70c. The weighted average of the above-mentioned tonnage, accurately figured, is 37.2c. per ton. The increased cost to operators producing about 41,000,000 tons, or substantially one-half of this year's tonnage, will be 35c. and upward per ton.

I therefore respectfully recommend that the prices fixed by your proclamation of Aug. 23, 1917, as modified with

respect to the price of pea coal by my order of Oct. 1, 1917, be uniformly increased in the sum of 35c. per ton, provided, however, that these increases shall not apply to any coal sold at the mine under existing contract containing a provision for an increase for the price of coal thereunder, in case of an increase in wages paid to miners.

In this connection, I desire to say that it is my expectation to order the reduction in anthracite prices which has been regularly given beginning Apr. 1, 1918.

I desire also to call attention to the fact that the Board of Conciliation created by the commission appointed by President Roosevelt, in 1902, has performed its tasks so acceptably to all concerned that there is no occasion for the introduction of an automatic penalty clause as provided in the case of the bituminous field, nor was the inclusion of any such clause provided for in the agreement of Nov. 17 between the operators and the mine workers.

Empty Coal Cars To Be Speeded Back to Mines

"We have today advised all interested lines that preference must be given to coal and coke and empty open cars returning to mines to the fullest possible extent consistent with the relief of terminals and junction points."

The above telegram was sent by A. W. Thompson, chairman of the General Operating Committee of the Eastern railroads, to Dr. Garfield in reply to his request for such action. Mr. Thompson in another message stated that he believes a drastic priority order well may be withheld until the railroads have been given a chance under their pooling arrangement to bring about the result desired.

Coal Conservation Campaign

Quite in contrast with the tense atmosphere in the main office building of the Fuel Administration is the quiet of an adjacent building from which a campaign for the conservation of coal is being conducted. It is not besieged by operators wanting a higher schedule of prices. Representatives of labor, with their constantly expanding demands, pass by to the main offices. The pulling and hauling of those interested one way or the other in priority orders or in the nonessential industries is 300 ft. away and causes no ruffle among Mr. Noyes and his assistants as they calmly think out ways whereby fuel may be saved.

While principal reliance is being placed in securing less waste in large plants and in cutting down unnecessary uses of power, great hopes are entertained of securing a considerable substitution of wood for coal. The aid of the Forest Service has been secured, and

trained foresters are to be sent wherever needed to point out how much wood can be cut without doing harm to the essential part of growing timber. Eminent physicians have been called upon to tell why houses should not be kept warmer than 68 deg. Their answers are being reproduced and sent broadcast to the press of the country. Many other steps are being taken to conserve coal, but these examples give an idea of the minuteness with which the question is being handled.

Anthracite Operators' Letter to Garfield

Following a meeting of the anthracite operators in New York on Monday, Dec. 3, the General Committee sent to Dr. Garfield, the Fuel Administrator, the letter which follows. The communication was signed by S. D. Warriner, Chairman of the Committee; W. J. Richards and J. B. Dickson.

New York, Dec. 3, 1917.

Hon. H. A. Garfield,
United States Fuel Administrator,
Washington, D. C.

Although our committee has received no formal notice from you respecting the advances in prices of anthracite authorized by the President upon your recommendation to offset the proposed increases to labor, we have observed the press announcement, which we assume to be accurate. In the present crisis we have felt it incumbent upon us to act promptly, and have today held a meeting of as many as possible of the operators affected by this price order.

The great difficulty we have encountered, you can well appreciate, arises from the fact so well stated in your letter to the President that "the increased cost to operators producing about 41,000,000 tons, or substantially one-half of this year's tonnage, will be 35c. and upward per ton"; or, in other words, that the permitted increase compels these producers to assume from their own pockets without possibility of recoupment, the excess allowed to labor above 35c. per ton.

This posture of affairs, so clearly and frankly indicated in your letter, left us only one ground of appeal to those producers whose demonstrated increased costs exceed the allowance; namely, an appeal to their loyal spirit of co-operation in the public interest even in the face of a substantial financial loss to themselves.

We are pleased to say that that appeal has been successful, and we are in a position to advise you that those operators have undertaken to sell at the prices named in the President's published order notwithstanding the fact that they dissent from your conclusion as being without justification on the record submitted to you.

Mindful of the period of uncertainty which followed the bituminous settlement, and believing that our employees and the consumers of our product are entitled to prompt information of this settlement, we are giving this letter to the press simultaneously with its dispatch to you in the confidence that you will approve our course in this respect.

The Question of Priority

The controversy which arose over the matter of priority last week, and which has been settled, apparently, by the placing of a ban on the too generous use of the priority power, was precipitated when Dr. Garfield issued the following statement:

"In order to secure immediate relief in the transportation of coal and coke, Fuel Administrator Harry A. Garfield requested Director of Priority R. S. Lovett to issue an order giving preference to all rail movements of coal, coke and empty coal and coke cars.

"The order requested by the Fuel Administrator would require the railroads to place all shipments of coal and coke ahead of general freight. The Fuel Administration believes that only a general priority order

insuring the prompt movement of coal and coke can relieve the present congestion of fuel traffic on the railroads.

"The plan to extend preference to empty cars returning to mines and coke ovens would operate to afford the greatest possible relief to coal and coke producers who have been hampered in keeping up their output by the shortage of cars.

"Fuel Administrator Garfield asked that the proposed order be made effective at the earliest moment possible, and that it be continued in force until further orders. This would enable the Fuel Administrator to expedite the general distribution of the coal supply, and to handle the available coal stocks to the best possible advantage."

The statement called forth a protest from Herbert Hoover, the Food Administrator, which was widely chronicled as a serious clash between Mr. Hoover and Dr. Garfield. The fact of the matter is, however, that there was no ill feeling between the two officials. Each was asking for what he deemed best for the commodities under his direction. Mr. Hoover's protest reads as follows:

"The United States Food Administration has protested to the Priority Board against any priority being given to coal or anything else over the movement of essential foodstuffs. The necessity of moving livestock and perishables and corn, oats and animal feeding stuffs generally is preëminent, or large amounts of food would be lost.

"The car shortage is a matter of the most extreme anxiety, especially now in respect to the coarse grains. The corn crop is softer than normal and requires rapid movement to the drying establishments at the terminals if it is to be saved. The prices of corn and of feeding stuffs are absolutely dependent upon the more rapid movement of the crops. Moreover, it is of no interest to the farmer to see large prices of corn at the terminals, if he cannot ship. Car shortages work to the benefit of few producers and to the loss of the majority of producers and to all consumers. With a free movement of corn the prices should recede rapidly, for the crop is large and in fact larger than can be consumed by the number of animals there are to eat it."

Pending the submission of cost sheets to the Federal Trade Commission, a 25c. increase has been allowed in the price schedule applicable to the Jellico district.

Coal companies which are supplying fuel to the Southern R.R. under contract, have been instructed to deliver the coal in equal daily quantities.

Photographs Wanted

"Coal Age" wants to obtain any photographs illustrating conservation of coal and ways of handling fuel economically, also any photographs of congested freight yards showing coal cars. These photographs are to be used as suggestive material in a fuel-conservation campaign planned by the Government, and any coöperation from our readers will be deeply appreciated.

The Labor Situation

General Labor Situation

More gratifying evidences of patriotism have been given by the anthracite mine workers. They show their goodwill by giving up their holidays to keep the public warm and the wheels of war industry turning. Now they renounce Thanksgiving Day, and probably when this paper appears, as it does on the Feast of the Immaculate Conception, it will be found that the mine workers have given up that holiday also. Bishop Hoban, of the Scranton diocese, issued a letter to be read in all the churches Dec. 2, urging the miners to attend early mass on that feastday and spend the rest of the day in the good work of providing fuel for the nation's needs. Reference is made in a short article in this department to the support of the nation afforded by the anthracite miners and some of those in Illinois, the latter state being one in which opinion is still somewhat divided.

There is some talk of a further conference with the mine workers now that a 35c. increase in the price of coal has been granted by the President instead of 45c. as had been expected. The wage increase offered the mine worker was figured on a 45c. price increase, and some think the mine worker should be willing to split the increase, seeing that the public is unwilling to have all the increase, as it now stands, passed on to the consumer, as it normally should be.

The men in central and western Pennsylvania are working as hard as the railroads will permit them. Even the strike on the Salisbury branch has come to an end. The car shortage, however, has not. It seems rather to be growing worse. The Baltimore & Ohio R.R., moreover, is threatening to confiscate coal, not being able to get a full supply because of car shortage. Smallpox has broken out in Clearfield County and also in Johnstown, Cambria County, and in Myersdale and Berlin in the southern part of Somerset County. As yet there are not many cases and the situation is not unduly serious, but everyone is alive to the possibilities.

The Illinois situation is improving. As stated in the previous issue, a contract is now signed. It has in it the following penalty clause, which Fuel Administrator Garfield views with approval:

"When any employee absents himself from his work for a period of two days without the consent of the company, other than because of proven sickness, he may be discharged. Any employee or employees guilty of throwing a mine idle or materially reducing the output of a mine, by failure to continue to work in accordance with the provisions of this agreement, shall be fined \$3 each, and for each additional day or part thereof they remain idle, a continuing fine of one dollar per day. Any operator who shall lock out all or any material part of his employees in order to enforce some condition in violation of this agreement shall be fined \$1 per employee so affected for each day or part of a day the mine is thus thrown idle."

All but four of the 15 mine workers arrested as a result of the battle between striking mine workers and soldiers in Webster County, Kentucky, at Clay last summer were freed on peremptory instructions of United States Judge Walter Evans when placed on trial at Owensboro recently. The court held that the Government did not make out a case against the eleven men.

The other four were tried on the charge of resisting with force the authority of the United States Government, but the jury failed to agree, and the men were held over to the May term of court. Only the 15 men just mentioned were arrested out of the 37 who were indicted.

Alabama has not yet made an agreement. The mine workers claim that men have been discharged for joining the union. They demand their reinstatement under a com-

promise agreement. The operators claim the men were discharged for cause or were never their employees. The matter is not one which can be lightly determined.

The union seems afraid to play an open hand. The operators ask for a list of the men to be reinstated, but the union refuses it. The eight-hour day, the penalty clause, and the contract system also hold up the signing of the agreement, but patriotism forbids a strike or a lockout, and a settlement is therefore still quite likely.

Labor Manifests Its Patriotism

The miners of Schuylkill County responded nobly to the call of their country on Thanksgiving Day by reporting for work. Though this holiday has always been observed heretofore by the miners of the anthracite field, this year, in answer to the call of the managers and the presidents of the locals, the men at 38 of the Philadelphia & Reading Coal and Iron Co.'s 40 collieries and several individual operations turned out and sent to market about 80 per cent. of the usual daily shipments from these operations.

The idle operations were the North Franklin colliery, at Trevorton, and the Lincoln colliery, near Tremont. At the former place, however, several hundred miners went to their daily work to shoot down coal even though the breaker was idle. The loyal men of Hickory Ridge, of the Susquehanna Coal Co. (now M. A. Hanna & Co.), turned out almost to a man. The Hickory Ridge mine holds the record of the region for the number of days worked in a year. The Susquehanna washeries were all operating full-handed.

As the employees of the Reading Coal and Iron Co. left the mines yesterday each man was met by the foreman or one of his assistants, who extended to him the personal thanks of President W. J. Richards and the company, as an acknowledgment of his patriotic spirit in working on a holiday.

A notice was posted as follows: "President W. J. Richards desires each foreman to express to each employee, personally, the appreciation he feels of the patriotic service he has rendered by working today in order that the people throughout the land might be better supplied with coal."

Schuylkill County miners are certainly showing their patriotism. In the recent Y. M. C. A. war-fund campaign, the allotment for Schuylkill County was \$40,000, and this amount was oversubscribed by more than 50 per cent., \$61,000 being collected. Every town and village in the county oversubscribed the amount allotted to it.

The campaign was carried on by the Patriotic League of Schuylkill County, of which W. J. Richards, president of the Philadelphia & Reading Coal and Iron Co., is the chairman. The county has oversubscribed its allotment in every campaign to raise money for patriotic purposes, including the Red Cross War Fund, both Liberty Loans, and now the Y. M. C. A.

The Collinsville Local, No. 264, of the Illinois branch of the United Mine Workers of America, which has 400 members, has joined the Red Cross in a body.

Alabama Miners Want New Conditions

The situation in Alabama is far from satisfactory. The mine workers desire changes in working conditions in addition to changes in wages. Their demands, as they formulate them, are as follows: (1) Reinstatement of all men unjustly discharged. (2) Right of men to belong to the union without discrimination, to hold meetings of the union without interference, to select and maintain mine committees and the establishment of machinery for the adjustments of dis-

pute. (3) The 8-hour workday for all classes of labor. (4) Uniform readjustment of tonnage and yardage rates and day labor and deadwork prices on the basis of a present price of 80c. per ton, Pratt seam. (5) Abolition of contract and subcontract system. (6) Right to select and maintain checkweighmen without interference. (7) Establishment of semimonthly pay.

The operators declare that they are not willing to put to work all the men who belong to the union, alleging that they believe that many men have affiliated themselves with that organization without having in any way qualified as mine workers. Many, they declare, have been discharged for sufficient reason. They have invited the union in vain to name the 600 men thus seeking reinstatement. The operators hold that given the names they can show satisfactorily that the men have no right to employment. It is contended that they have joined the union only to secure the strike compensation. The 600 men have already cost the union \$80,000, for all are receiving \$10 a week. It was part of the compromise secured by William B. Wilson, the Federal Secretary of Labor, that all men discharged for joining the union be reinstated into full standing at the mines.

Another clash was as to the 8-hour day, and a third point of divergence was as to clause 5, wherein the abolition of the contract and subcontract system was demanded. This system dates back to the strike of 1904. The operators allege that if the system is wiped out the tonnage produced will suffer.

George B. McCormick, president of the Alabama Coal Operators' Association, for the operators declared that the number of union mine workers had been grievously overestimated. The operators believe that far from 23,000, as alleged, there are only about 400. John L. Lewis, the vice president of the international organization, refused to declare how many men were in good standing in the union.

With such differences the conference at Washington broke up on Nov. 26. What will happen is uncertain, but there seems hope that the deadlock will be broken. The operators' representatives at Washington were George B. McCormick, president of the Pratt Consolidated Coal Co.; James L. Davidson, secretary of the Alabama Coal Operators' Association; John H. Bankhead, Jr., Erskine Ramsay and S. L. Yerkes. The miners had J. R. Kemmerer, the president of district No. 20; Thomas Hammond, of Cardiff; J. W. Harrell, of Piper; John G. Smith, of Carbon Hill; W. P. Harrison, of Coal City; Thomas R. King, of Birmingham; and John L. Lewis, vice president of the international organization.

The Alabama mine workers seem obdurate about the penalty clause. When it was presented for approval John L. Lewis did not respond in its favor.

Are Stirred by "Coal Age" Figures

Miners of subdistrict No. 5, in central Illinois, declare that they need more "protection," and they are planning to form a ways-and-means committee for that purpose. At a meeting of delegates from the locals in the Springfield district, a resolution was adopted declaring that it was to the best interest of the miners to have an organization which would secure for them more information about conditions and would insure them of the greatest possible measure of protection. The resolution also provided for the creation of such an organization, to be known as the ways-and-means committee of the district, and to meet every 60 days. The expenses are to be met by an assessment of 1 per cent. per month. Members of the committee are to serve without compensation.

Henry Milfs and Arnold Neuenschwander are under arrest at Edwardsville, Ill., on charges of arson. They are held in connection with a fire which destroyed the top works of the Blue Mound mine at New Douglas, Nov. 16, the day before it was to be placed in operation. Officials say Neuenschwander has signed a statement implicating Milfs. The latter boasted that he was an Industrial Worker of the World, but after his arrest he denied that he was connected with that organization.

Local Union No. 2514, of Belleville, Ill., has issued a pamphlet, which is being widely circulated, as an answer to payroll figures recently printed in *Coal Age*. These figures showed that the smallest amount received by any of the miners employed by a large company at a two-week pay day was \$53 and the largest amount was \$150.49, with the majority receiving \$75, \$80 and \$90.

The pamphlet contains a compilation of the wages, during 28 years, of a miner whose name is not given. It shows that he received in that period \$15,798.46. He worked at eight different mines and is declared to have been industrious and moderate, working at all times when the mine at which he was employed was in operation.

His weekly income averaged \$10.85. His best year was 1916, when he earned \$976.55. His daily wage average for 1916 was \$3.25. His poorest year was 1915, when he earned \$266.52. His average daily wage that year was 89c. His best weekly average in 1916 was \$18.76. His poorest weekly average in 1915 was \$5.11. His average per week for 1915 and 1916 was \$11.93.

The promulgators of the pamphlet refrain from giving any 1917 figures. Interesting information about 1917 wages, which the pamphlet fails to provide, comes from Springfield, Ill., where the 4000 miners received \$500,000 as their Thanksgiving pay for the first 13 days under the Washington agreement, or about \$125 apiece. Fifty-eight miners of the new Jones & Adams Mining Co. received a \$100 bill each. One Jones & Adams miner earned close to \$180, but it was cut down to \$167 by the charges for powder, union dues and equipment. His average was more than \$13 per day. Most of the miners received more wages than their bosses.

Miners Seek Working Opportunity

Fulton County, Illinois, has not recently been a progressive mining community. In 1912 its tonnage had risen to 2,453,424 tons, but in 1915 the tonnage had declined to 1,849,906 tons. The miners who are desirous of continuing residence in Fulton County despite its waning fortunes have petitioned the State Public Utilities Commission to grant a certificate of necessity and convenience to the Bryant Northwestern R.R. Co., which will open up a new coal field near Bryant. The petition was signed by 485 miners.

The Star Coal Co. mine at Cuba is to be closed soon. It employs about 200 men and the shutdown will deprive them of work. It is urged that the opening of the new coal area will give them employment. Carl Scholz, consulting mining engineer of the Chicago, Burlington & Quincy R.R., said, at the hearing in Springfield, that there was much coal in the hills of Fulton County and that the opening of the new mines will not disturb conditions at existing properties.

The Big Creek Coal Co. is expected to operate in McLean County when its Fulton County mines are worked out. The Fulton County miners say they want to stay in their old homes and will do so if the new field is opened up.

Franklin Bache Wins His Suit

After taking testimony in the Federal court at Fort Smith, Ark., for four long weeks, the suit of the Bache-Denman Coal Co. against the United Mine Workers of America, the International Union and District No. 21, comprising the States of Arkansas, Oklahoma and Texas, came to an end, Nov. 22, with a decision in favor of the coal company. The suit was for triple damages, the claims amounting to the sum of \$2,222,000. The court did not award the whole amount, but reduced the damages to \$600,000.

More than 100 witnesses were called by the plaintiffs to prove the charges against the union. It is likely that this conviction will convince the union officials that they must tighten their grip on the members and prevent violence and arson. The corporate responsibility of the organization is by this decision clearly affirmed. Men cannot conspire together against the interests of the public unless they are labor leaders, and now it is shown that a conspiracy of labor leaders ending in violence and murder is not permissible.

Editorials

EDITORS and paragraphists must have their fling at the Teutonic mind, Teutonic psychology and Teutonic obtuseness. Then "the tumult and the shouting dies," and the Teuton twist has been grafted on about 40 per cent. of all human minds. If the German untruth by reiteration, by continued exposition, can thus be foisted on an unwilling world, surely when the same methods are employed to convey a truth the propagandist of that truth cannot fail in his purpose.

* * *

Iteration will inevitably have its effect. Unfortunately, there are some truths we hold to be so self-evident that we never even trouble to state them; as a result a plausible denial of them, frequently and oracularly delivered, speedily undermines their fancied security. The soapbox orator mounts his uncertain pedestal and assails the nation, the present order of things, the capitalists and the army. He is made the victim of catcalls, of boos and of derisive cheers, but he expects them. He is unabashed. Though his audience is not wholly friendly today, he will be there tomorrow; and his perseverance will ultimately make converts.

* * *

What is more, some of the more unfriendly of auditors, those who condemn the soapbox orator most bitterly, still have a "hunch" that there must be a modicum of truth or he would not be expounding the matter so glibly day by day. Instinctively we believe that what is done so industriously and with such an air of conviction must be worth doing and must have a substratum of truth.

* * *

ALL of which leads to the notion that the game of the agitator is the game of the anti-agitator also. He must meet the situation in much the same way. Because the operator's notices, his arguments and his pamphlets are disregarded, or disparagingly referred to, is no reason why they should be withdrawn or even necessarily that they should be modified. They are sure to meet with opposition. They are condemned already beforehand, but what of that? If they are fair arguments—or for that matter even if they are not—they will attract the favorable comments of many.

* * *

Silence and reliance on the native commonsense of all men is usually not the better part of wisdom, certainly not where the propagandist who opposes you has a plausible story to tell. Unfortunately, the operator usually allows the story to be industriously spread till the damage is done. The fire is allowed to run wild, and then he wonders that a full pail of publicity will not drown a burning forest of agitation.

* * *

Sometimes a word or two well placed will prevent the first spark of discontent. When the mind is rightly bent toward economic questions, no amount of

specious reasoning by biased orators will sway the thinker. We have let the world go awry. We have allowed the working man to believe that a yard of cloth will furnish him with a suit and an extra pair of trousers. He has yet to learn that the production of the world is just so much, and that divided it will not give every family a palatial residence in the city, a country house, an automobile and an extravagant scale of living. We cannot all live in the style of a successful business man. The workman does not yet know that the wages of the producer are paid by the consumer, and that he is the consumer. He does not understand that cost-of-living chases wages as fast as wages can run ahead.

* * *

Poor Richard's philosophy is out of date. We never see it nowadays. In early youth we laboriously copied it, when learning to acquire facility in the use of pencil and pen. The logic of life is cast out of the schools. The churches for a while continued to teach us of our personal follies, but they, like the political clubs, the unions and the operators' associations, are too often devoted now to the exposition of the consummate wickedness of others.

* * *

THREE is therefore no training in fundamentals. For years there has been no schooling in patriotism. We have met occasionally to commend ourselves and condemn certain of those that are now our allies, but did we ever arrive at the happy point where we represented patriotism as a self-surrender to our country, as a sacrifice, as solidarity between citizens, as self-forgetfulness and a certain openmindedness, to say the least, about taxation, which is indeed what patriotism means? The Romans usually combined it with the idea of death and sacrifice rather than with ease and glory.

* * *

Because we never really taught it, when the war started we had to learn just what it meant all over again. We are now no longer in general commanding ourselves; we are not in general condemning other people. Quite soberly we are looking at the sacrifice. If we had only learned that before, America would have risen in a night, even as Mr. Bryan portrayed, morally ready for war even though physically and perhaps mentally utterly unprepared.

* * *

Unfortunately, we have come to regard the coal business as a material occupation—a thing of tons and wages, a juggling with tipples and trestles. But let us not lose sight of the fact that back of it all is the man and back of the man the mind and the heart of the man. What a folly it is to forget it. We put men in our organization as one might put wheels in a mechanism without keys to hold them in place and we overlook the fact that the mind and heart of man are the main factors in the conduct of business.

After All, Day Labor Is More Efficient Than Piecework

DAY labor, taken as an institution and over long periods of time, is more efficient than piecework even when the day laborer as an individual is less efficient than the laborer who works by tonnage, yard or piece. It must be remembered, however, that the laborer who works by the ton or yard is in himself apt to be extremely inefficient.

He is prone to keep his output down to a low level by working short hours or by lounging on the job. Some men will always be unwilling to work any longer hours than will secure a given daily wage. Some men argue that the piece rate will always be adjusted so as to pay a minimum wage to the slackest of workmen, and it is therefore well not to develop to the uttermost the opportunities afforded by the piecework scale.

The earnings of miners and heading men vary so much under equal conditions that there are the best of grounds for believing that most men might average a larger daily wage were they to do their utmost.

But to return to the distinction between day labor as an institution and the day laborer himself, we may first call attention to a remarkable change which has taken place in coal costs. In the nineties, when a mine reached any size, the haulage costs were almost sure to run to 15 or 20c. a ton. In fact a large mine working for the competitive market had frequently to close down because the haul was too great to make mining profitable.

Coal selling at the bituminous mines of central Pennsylvania at an average of 80c. a ton was dug by the miner for 30 and 35c. a ton, and the operator could barely make a profit despite the large margin for haulage, dumping, railroad-car loading, ventilation, pumping, road grading, royalty and overhead. Yet royalties were low and preparation was in its infancy; in fact it might be said that in those days there was no preparation.

The high cost was due to the inefficiency, not of the day laborer himself, but of the tools put into his hands. The man himself was keener to work than he is today. Employer and employee knew no class distinctions. They were of one and the same nationality. The employee knew his job well as far as technique was concerned. The mine worker, when he met his fellows, boasted of his big day's work; and really if he drew the long bow he did it because he wanted to be as valiant a performer as he claimed he was.

Yet, as has been seen, there was a gap of 45 to 50c. between the cost of coal extraction proper and the cost at the tipple. Fortunately, however, the day labor system has found a cure for some of its old inefficiencies; and yet concurrently the man himself, if anything, became less efficient. By the operation of natural causes the operator and his employee became separated, both geographically and socially speaking. Muck rakers and agitators soured the employee's mind. He no longer boasted of the way in which he worked. Rather he bragged, discreetly of course, about the systematic way in which he loafed. Every mine had chronic trouble with laborers of all kinds.

Despite this fact the cost of haulage fell instead of rising. Instead of paying 15c. a ton for haulage we were (till the recent rise of wages) accustomed to re-

gard 5 to 7c. as a reasonable cost for that labor charge. The wages of the day hands had increased considerably; their hours had been reduced; their enthusiasm had evaporated; hauls are increased in length multifold, yet somehow the cost of the haulage per ton declined.

Grades had been eliminated; wood rails had given place to steel; the tracks were ballasted; the roads were ditched; headings became higher, cars became larger, string teams became more common; then came mechanical haulage of every kind with greater speeds, the cars became still larger; bearings which would hold oil were introduced; the rails became still heavier, the wheels had chilled treads, the cars were stiffened so that they kept the track better and were drawn with less resistance. Finally came the roller and ball bearing. There has been improvement after improvement. Only a few significant ones have been recorded.

At the same time gathering has been made more expensive. The car is now usually taken from the face; formerly it was taken from the room parting. Before it was a charge on mining, for all that the charge did not appear on the books. Now it is a charge on haulage. Still, despite that fact, despite the rise in wages, despite the greater extent of the mines, the cost of haulage declined while the cost of mining, on the pernicious tonnage wage basis, was continually augmented.

The reason is not far to seek. Every labor-saving device was pecuniarily a gain to the operator. He had every inducement to introduce new inventions and ideas. Just as compensation has endowed safety so the day-labor plan endowed efficiency. The piecework plan endowed nothing but the medieval brute strength of the workman, and there was no money to be derived by revolutions in the manner of coal getting.

One advance did come when, in the bituminous fields, machines were introduced. But the union by lowering the differential and by opposing the machines prevented the full development of cutting, conveying and loading machinery.

Had the union been stronger, still less would have been done. The union and piecework, an organization and a system of both of which some good things might be said, have combined to reduce efficiency. As their strength increases, the growth of economical mining will tend to decline, and may even go backward.

What Will Win the War

FROM time to time one hears or reads such statements as "Coal will win the war," "Food will win the war," "Airplanes will win the war," "Machinery will win the war," each speaker or writer, as the case may be, eloquently holding a brief for what lies nearest his heart, and each pointing out with particular pride that it is to the thing of which he speaks that the world will have to look for victory and peace. Therein lies the trouble—the reason, one might say—for the lack of co-ordination on the part of industry and the apparent apathy of the workers. If the doctrine were driven home that no one thing or industry can win this war, but that amalgamation, a concentrated effort from everyone in every industry, is vital to a successful carrying on of the war, we would sooner arrive at real efficiency. What will win the war is self-sacrifice and maximum endeavor—not from one man or from one industry, but from every man and from every industry.

Book Reviews

Coal Fields in Eastern Canada

The Coal Fields and Coal Industry of Eastern Canada; a General Survey and Description, Bulletin No. 14. By Francis W. Gray. Pp. 62; 6½ x 9¾ in.; 26 plates and 1 map. Department of Mines, Mines Branch, Ottawa, Can. Paper Cover.

REVIEWED BY J. F. K. BROWN

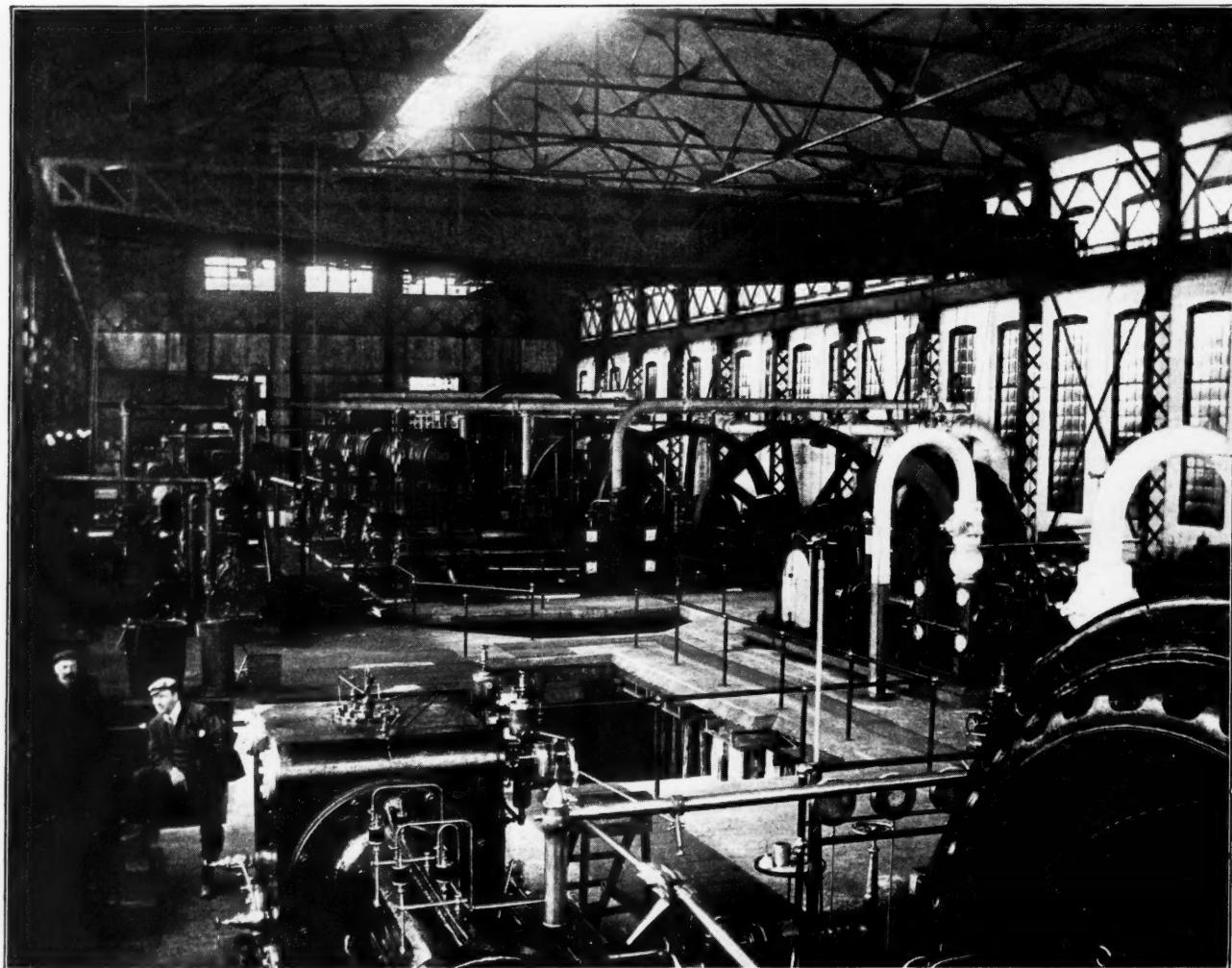
For this bulletin a considerable mass of data relative to conditions in eastern Canada has been collected and abstracted, yet Mr. Gray has managed to keep the monograph within a reasonable compass. In so doing he has selected the essential facts with great ability, and he has so arranged them that the present status of the coal industry is clearly illustrated and understood. Furthermore, the information is accurate and reliable.

Some space has been devoted to the history of coal mining in the district under review. He recalls the fact that the original reason for the operation of the mines was to supply the garrison of the fortress of Louisburg with coal in the earliest years of Canadian history. But the recent operations are equally interesting, especially those parts which

deal with submarine mining and the Pictou coal field. In Nova Scotia some of the present working faces are 1½ miles from the shore line, and preparations are being made to operate coal from leaseholds lying 3½ miles from the coast. Mr. Gray states that the day is not far distant when the percentage of coal taken from the submarine areas will be greater than that taken from the land areas. Two submarine mines have been temporarily lost because operations were conducted under too thin a cover, but as the cost of operation in other mines increases, these will again be brought into the productive field.

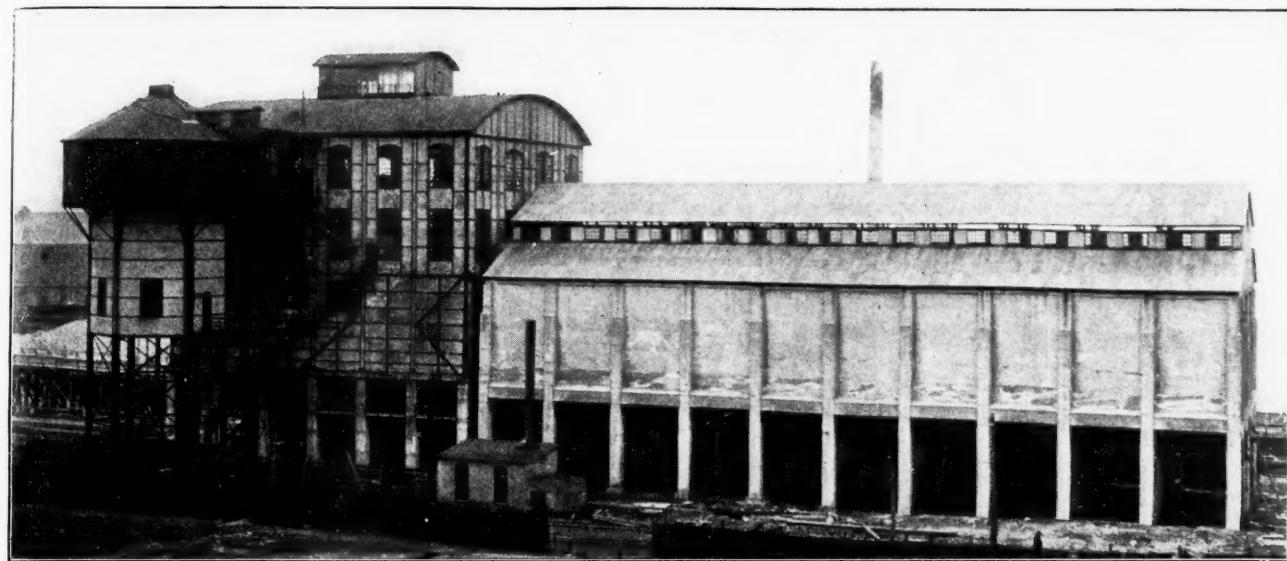
The limiting factor is not, as might be expected, the depth of the coal or thickness of the cover, but is the horizontal distance over which the coal has to be hauled. As a result of this experience in submarine mining special rules and regulations have been promulgated by the Nova Scotia government to safeguard the coal mines where they are operated under the sea, and these regulations would form a suitable standard for any other country the conditions of which approximate those described by Mr. Gray.

The Pictou coal field is remarkable for a wholly different reason. The field is 11 miles long by about 2½ miles wide,



From "The Coal Fields and Coal Industry of Eastern Canada"

MAMMOTH POWER HOUSE OF THE DOMINION COAL CO., AT GLACE BAY, NOVA SCOTIA, SHOWING AIR COMPRESSORS AND ELECTRIC GENERATORS



From "The Coal Fields and Coal Industry of Eastern Canada"

"BAUM" WASHERY OF DOMINION COAL CO., WITH CONCRETE STORAGE POCKETS AND
SETTLING TANK. HOLDS 8000 TONS OF WASHED COAL

and in roughly one-half of this area a total thickness of 188 ft. of coal is found in 2700 ft. of strata, and there may yet be more coal discovered. There is therefore one foot of coal to every 14 ft. of rock. This plethora of coal includes seams 34 ft. 7 in., 22 ft. 11 in., 21 ft. 9 in., and 29 ft. 9 in. thick, and one 20 ft. 4 in. thick, as well as a number of others over 10 ft. This shows a remarkable development of the Carboniferous system within a relatively small basin.

Mr. Gray has succeeded in producing an extremely interesting and readable bulletin. Since he occupies the position of assistant to the vice president and general manager of the Dominion Coal Co., by far the largest operator in the district, he has been able from that vantage point to acquire that broad viewpoint which is characteristic of this work.

A Comprehensive Mine Directory

The Mining Catalog for the Year 1917, with treatise and engineering data covering various subjects pertaining to mining. Pp. 807, 9 x 12 $\frac{1}{2}$ in. Keystone Consolidated Publishing Co., Inc., 302 Penn Ave., Pittsburgh, Penn.

This is a new issue of the well-known "Keystone Coal Field Directory and Mining Catalog." Many important changes have been made, among which the newly written prefaces to the various departments of the book are the best. E. N. Zern, who has so acceptably filled a professorship of mining at the West Virginia University, at Morgantown, has contributed these valuable additions to the book. They have not been lightly undertaken or carelessly compiled. Mr. Zern is a conscientious worker, and one who has an excellent knowledge of mining subjects.

The book now only contains the prefaces and the advertising matter. The directory of coal-producing firms, with its wealth of reliable information, has been published for several years in separate form suitable for sliding into the pocket. This year that directory is omitted from the larger volume and published solely in the handbook edition. In that volume are 924 pages of the finest type. It measures only 4 $\frac{1}{4}$ x 8 in. Space is left at the foot of each page for corrections and additions, which the development of business makes in the course of a year, which corrections and additions it is the function and pleasure of the directory company to supply.

To return to a consideration of the larger volume, the principle of the publishers has been to obtain advertising notices of a reading character. The matter furnished by the publisher is eminently readable and adds detail to Mr. Zern's interesting and impartial introductions. These little treatises, for they are nothing less, cover Preparation and Loading of Coal, Development and Engineering, Mine Tim-

bering and Building Materials, Coke Ovens, Power Plant, Lubrication, Ventilation, Hoisting and Haulage, Mine Cars, Track, Hydraulics, Mine Locomotives, Mining Machines, Electrical Supplies, Explosives, Mine Lighting, First Aid and General Mine Supplies. The book grows yearly larger and better. The company in its envoi to the reader says that it is 40 per cent. larger this year than it was last year, and therefore, of course, far larger than it ever was before.

The matter in the volume has been exceedingly well arranged. The comprehensive index of products, under which appear also the names of the firms making the particular article indexed, enables one seeking a description of any special machine or tool to tell at a glance the page on which these data may be found. All in all, the volume may well be termed a "comprehensive mine directory."

Fact Digestion vs. Verbal Cramming

How To Study—By George Fillmore Swain. Pp. x + 65; 5 x 7 $\frac{1}{2}$ in.; no illustrations. McGraw-Hill Book Co., Inc., 239 West 39th St., New York. Paper cover. Price 50 cents.

The reviewer has tried to see a utilitarian advantage in this booklet, "How To Study," but cannot feel that such an advantage is to be gained. Those who will read the book and study it will learn much about the psychology of study, but the qualities it describes are needed as much for the reading of the book as for the absorbing of any other class of information. If you can study this book entitled "How To Study," then indeed you already know how to study and do not need a book to teach you, though its perusal may much please and reward you.

Dr. Swain's little volume does much credit to him. Its clarity, its perspicacity, its genius are apparent from cover to cover. Those who can think, who have studied, who enjoy study will read it with pleasure. Those mental slackers who have crammed facts into their minds as we cast laundry, umbrellas, shoes and what not into a dark cupboard, unorderly and unmethodically, will see themselves duly exorcised, but will hardly be brought to repentance and a better mind.

The trouble is that if Dr. Swain's pupils and the pupils of others like him are not weaned from empiricism in study by contact with their preceptors, no advice will wean them. If study can be taught, this little volume will teach it. It is a bracing little book, full of recommendations against shallowness and cramming, and in favor of sanity in study. The subtitles are: The Proper Mental Attitude, Studying Understandingly, System, Mental Initiative, Habits of Work, Suggestions to Teachers.

Legal Department

Recent Legal Decisions

ABSTRACTED BY A. L. H. STREET
Attorney at Law, Minneapolis, Minn.

SAFETY DUTIES OF MISSOURI OPERATORS AND MINERS—Under the mining law of Missouri, it is the duty of a miner to keep his working place safe and the duty of the employing operator to keep the entries of the mine in a condition of reasonable safety. (Missouri Supreme Court, State on relation of Central Coal and Coke Co. vs. Ellison, 195 Southwestern Reporter, 722.)

VALID FREIGHT-RATE REGULATION—The provision of the Missouri constitution under which it is made unlawful for a railway company to charge a higher rate for a shorter than for a longer intrastate haul, and under which shippers are entitled to recover overcharges, is valid. (United States Supreme Court, Missouri Pacific Railway Co. vs. McGrew Coal Co., 37 Supreme Court Reporter, 518.)

DOMICILE OF COAL CORPORATION—For the purposes of bankruptcy proceedings, the domicile of a coal-mining company must be deemed to be the district in which its mining operations were carried on, rather than in another district where its head office was maintained. (United States Circuit Court of Appeals, Sixth Circuit; Continental Coal Corporation vs. Roselle Brothers, 242 Federal Reporter, 243.)

SUFFICIENCY OF PROOF OF TRESPASS—Treble damages cannot be awarded under the Pennsylvania statutes for mining coal on the land of another, where the only evidence tending to show that the trespass was knowingly committed is given by a witness having no engineering knowledge as to the boundary line of the property and giving opinions based on pure speculation. (Curtis vs. Soisson, 65 Pennsylvania Superior Court Reports, 64.)

BUYER'S RIGHT TO DAMAGES AS FOR BREACH OF CONTRACT—The buyer under a contract for a purchase of coal is not entitled to recover damages for the seller's refusal to deliver without showing either an offer to pay the agreed price or readiness, willingness and ability to pay, in the absence of an agreement for extension of credit by the seller. (New York Supreme Court, Appellate Division; Makepeace vs. Dilltown Smokeless Coal Co., 166 New York Supplement, 92.)

CONTRIBUTORY NEGLIGENCE OF EMPLOYEE—The fact that a coal company had failed to comply with a statute requiring a trestle in its works to be guarded does not render the company liable for death of an employee who fell off an unguarded side, if he went upon the trestle merely to gratify curiosity and was not required to go there in the performance of the duties of his employment. (McGeever vs. Lehigh Valley Coal Co., 63 Pennsylvania Superior Court Reports, 91.)

INJURY TO MINE TIMBERMAN'S HELPER THROUGH FALL OF ROCK—In affirming judgment in favor of an Illinois timberman's helper for injury sustained through fall of rock at a point where no examiner's mark indicating a dangerous condition was found, it is held that such employees, as well as miners, are entitled to the benefits of the safety provisions of the Illinois Miners' Act; and that \$500 was not an excessive damage award, where the injured man suffered dislocation of the hip and various bruises and lost three months' work as a result of the accident. (Nagalil vs. Shoal Creek Coal Co., 201 Illinois Appellate Court Reports, 220.)

RELEASE OF SURFACE SUPPORT RIGHTS—When coal in place is sold under a deed which confers the right to mine "without any liability for injury caused thereby to the surface of the land," this exemption from liability inures to the benefit of successors of the purchaser of the coal in place, and is not to be regarded as a mere personal contract between the parties to the deed. (Monongahela River Consolidated Coal and Coke Co. vs. Hines, 64 Pennsylvania Superior Court Reports, 6.)

A FORM OF UNLAWFUL FREIGHT REBATING—Where a railroad company had leased its coal lands to a mining company on a royalty basis, failure to collect or charge royalties on coal shipped by the mining company over the railroad company's lines in interstate commerce constituted a violation of the Federal statutes which forbid granting of concessions from established transportation rates. (United States Circuit Court of Appeals, Second Circuit; United States vs. Northern Central Railway Co., 241 Federal Reporter, 25.)

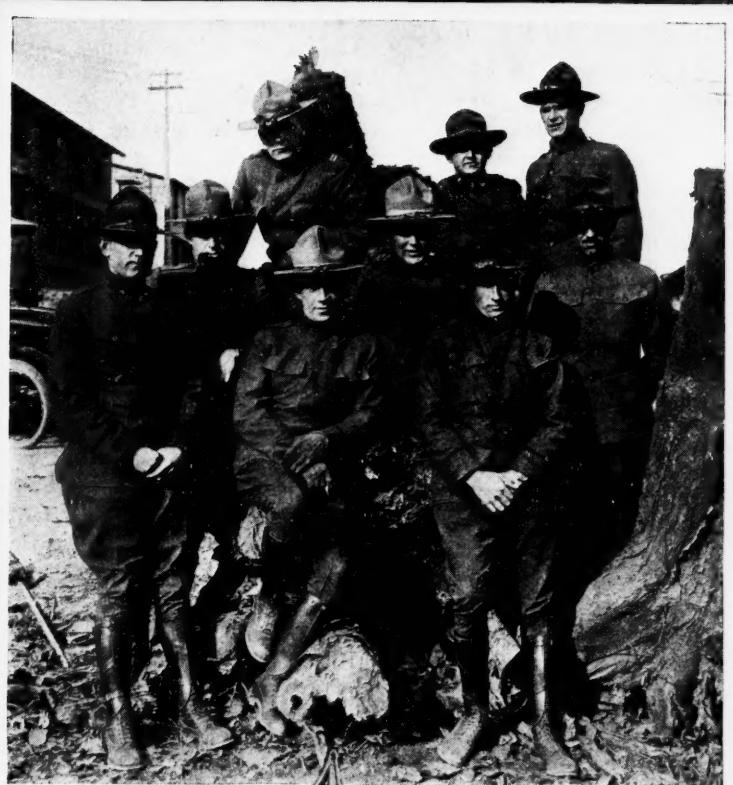
BUYER'S DEFAULT DEFEATS SELLER'S LIABILITY FOR NON-DELIVERY—Though a coal-mining firm repudiated a contract to deliver coal, and the buyer insisted on the making of further shipments, the latter cannot recover for nondelivery where he failed to pay for coal already delivered at the time agreed upon for payment, or to offer to settle for such deliveries by offsetting damages resulting from the seller's breach of the unperformed part of the contract. One in default himself under a contract cannot complain of breach by the other party. (Chicago Washed Coal Co. vs. Whitsett et al., 201 Illinois Appellate Court Reports, 484.)

INJURIES TO EMPLOYEES IN KANSAS MINES—Under the laws of Kansas a mine operator cannot avoid liability for injury to a coal miner, due to the operator's negligent failure to furnish props to secure the roof of the miner's working place, on the ground that the injured man assumed the risk or was guilty of contributory negligence. But before there can be recovery of damages there must be proof of causal connection between the operator's negligence and the miner's injury. (Kansas City Court of Appeals, Church vs. Central Coal and Coke Co., 195 Southwestern Reporter, 573.)

COAL DEALER PROTECTED BY CONTRACTOR'S BOND—The Tennessee statute, which declares that contractors for public work must give bond to pay for all labor and materials used in performing the contract, inures to the benefit of a coal dealer who furnishes fuel for operation of the contractor's boilers in doing such work, and on the contractor failing to pay for such fuel, the dealer may sue on the bond. (Tennessee Supreme Court, Pittsburgh Coal Co. vs. Southern Asphalt and Construction Co., 196 Southwestern Reporter, 490.)

BREACH OF OPTION CONTRACT—The owners of coal land executed an option to lease on or before a specified date all coal underlying the property at a fixed royalty. The contract further provided that the holders of the option would bore and thoroughly test the property within six months from the date of the contract, and within one year erect a breaker. The tests were made and the option holders demanded a lease from the owners before the expiration of the year and within time sufficient to build a breaker. Without proper reason, the lease was denied, and the owners leased to a third person at a royalty larger than that fixed in the option contract. Held, that the holders of the option are entitled to damages compensating them fully for loss of their bargain. (Daley vs. Reed, 63 Pennsylvania Superior Court Reports, 507.)

COMPANY A, 27TH U.S. ENGINEERS



THE FIRST MILITARY MINING UNIT TO BE ORGANIZED IN THE UNITED STATES ARMY

This is the nucleus of the thousands of men who probably will be incorporated in the special mining regiments which are to form a portion of the American Expeditionary Army. Company A is at Camp Meade, Md. The upper photograph is of the officers of Company A. In the front row, left to right: Lieut. Ellsworth H. Shriner, Capt. Norval J. E. Welsh (commanding), First Lieut. Ralph S. Edmonson. Middle row, left to right: Lieut. Vaughn H. Wilson, First Lieut. Buckingham Miller, First Lieut. John J. Croston. Back row, left to right: Medical Corps: Capt. Wilson G. Wood, Lieutenants Brady and Gillespie.

Discussion by Readers

Pennsylvania Mining Law

Letter No. 2—I have been pleased to note the opinions of some of my fellow mine foremen regarding the act of the Pennsylvania legislature legalizing the employment of uncertified men as mine foremen. I agree heartily that this was taking a step backward.

When this law was enacted two years ago, I shared the opinion of other mine foremen that its effect would be to reduce the wages paid for certified foremen. It seemed natural to suppose that this would be the result, since a certified foreman would have nothing to back him. He would be met with the argument that any good miner was capable of filling the position of foreman, as long as he was working under the instructions of the superintendent, who might be supposed a capable mining man.

Instead, however, I am proud to say that very few Pennsylvania coal companies apparently desire to employ an uncertified man in the important position of mine foreman. Even where the scarcity of certified men has made it necessary to employ temporarily an uncertified man, I have observed that the company would gladly replace him at the first opportunity and hire a certified man in his place.

UNCERTIFIED MAN EMPLOYED AND FAILED

Allow me to cite, briefly, my own experience. I was employed as mine foreman of a small mine producing about 125 tons of coal per day. When I left that place to accept a position in a larger mine, the vacancy was filled by an uncertified man who was taken from the inside of the mine and made foreman. The mine was an exceedingly hard proposition, the coal being low and very hard. The workings were poorly ventilated and it required constant effort and scheming to maintain the output of the mine.

The first month after the new man took charge, however, the output of coal was increased to 150 tons per day, which naturally made me feel that either the new man was more competent than myself, or that I had been laying down on the job. In reply to the boys who informed me, with a sneer, how the production of the mine had been increased, I told them to wait another month. As I had expected, the output for the second month showed a great decrease, having fallen to 65 tons a day. It was clear that there was nothing gained in rushing the output for the first month, since the average for the two months fell below the normal output of the mine, being only 107½ tons a day.

My successor was a man who, evidently, did not hesitate to claim that he was "just as competent as a certified man." The sequel proved, however, that his inability to make good before a board of examiners and secure a certificate was only a forerunner of his incompetence in the actual charge of a mine.

I am very glad that so much interest has been shown in this discussion, as it may help to repeal this provision

of the Pennsylvania law and restore the former good standing of the coal-mining interests of the state, which has suffered in comparison with other states by reason of this enactment. Prior to the passage of this law, the coal-mining laws of Pennsylvania could be said to be second to none, in respect to the safety and efficiency required in all coal-mining operations.

McIntyre, Penn.

CERTIFIED FOREMAN.

Miners and the War

Letter No. 3—I have noticed some very interesting facts presented in letters that have appeared in *Coal Age* regarding the mining situation as it exists at the present time, and feel that I would like to say just a word myself on this subject.

Certainly, the coal industry today has reached the most critical period in its entire history. Every effort is being put forth by operators to meet the extraordinary demands of the nation for coal. The chief difficulty seems to arise in the shortage of cars required for the transportation of the coal to the markets. It would appear that the railroads are practically unable to cope with the situation presented.

To add to the present difficulties, there is apparent a general feeling of restlessness among coal miners, which is quite unusual when conditions are normal. The cause is probably due to the uncertainty and excitement caused by the war. Labor is in demand to a greater extent than ever before, and this, of itself, gives the mine worker a certain advantage. In their present excited condition, many miners do not hesitate to do things that they would not do at another time, feeling that if they are disciplined too severely for their acts they can readily secure work elsewhere.

FOREMEN MUST EDUCATE THEIR MEN

It must be acknowledged that where such conditions as these prevail they add greatly to the difficulties and responsibilities of the mine foreman. His only salvation lies in being able to educate his men to a higher standard and bring them to understand that all safety measures are for their own good. This can be done most effectively by friendly heart-to-heart talks with the men and a kind but firm insistence that they obey the rules of the mine.

Maintaining discipline in the mine is made more difficult by the fact that, at present, there is quite a number of men employed underground who have little or no knowledge of coal mining. Understanding little of the dangers that exist underground, these men are prone to take many chances and do things that they have been instructed not to do, thereby increasing the danger to themselves and others.

To sum up the matter, let me say that the only way to do our bit in winning the war is for both miners and operators, including all mine officials under and above ground, to get together and coöperate to the same

end—namely, to increase the output of coal and lessen the waste of material in every way possible.

The average miner does not give much heed to saving timbers, track material and other supplies. This is particularly true where the saving of such material would call for a little effort on his part. What are a few props, ties or rails to him, except as they make it possible for him to load more coal.

What is needed, here, is a little patriotic talk by the mine foreman and his assistants. The appeal to a man's patriotism will often do much to overcome his tendency to a wasteful use of material that should, now more than ever, be preserved. Let every man lend a hand and do his bit in the work that is before us.

Hooversville, Penn.

J. H. TIPTON.

Mass Education Needed

Letter No. 1—After neglecting *Coal Age* for nearly four years, I started recently to read and study it again. I was greatly interested in the reference made to "mass education," in an editorial, Nov. 3, p. 770, in which the writer draws attention to the need of more general education among the miners.

It is true of the coal industry that mining education is largely confined to the mine officials. My experience in metal mining convinces me that the foremen of metal mines are generally better educated than those employed in coalmines. The metal-mine foreman understands every class of work performed in the mine of which he has charge, whether it be laying track and switches, loading ore or timbering. He has a better class of men employed. In coal mining, it is not uncommon to find a man laying track or timbering who is a shoemaker, baker or other tradesman.

It seems to me that enough attention is not given to the matter of employing men, in coal mines, who are familiar with the tasks they must perform. They are not trained for the work. The higher mine officials—general superintendent or general manager—when making their trips of inspection through the mine, seldom see the lack of efficiency that is often displayed in the work of tracklaying and timbering. This is only observed by those who are constantly in touch with the work. My duties have been those of a tracklayer, and practice has enabled me to lay a switch alone in about the time that it would ordinarily take two men.

Only a few days ago my helper complained of the hard work he had in a neighboring mine, where he was compelled to work overtime two or three nights in the week. I asked him how many loaders he had to lay track for, and he replied 24, while I am laying track for 27 in the same vein of coal. He said it took him a whole day to lay a light switch of 16- or 18-lb. rail, work that should be accomplished in at least three hours' time by a man who is trained for the job. Much the same is true of timbermen and other day-men working in mines. There would be a great improvement if mine labor could be paid for on the basis of piecework, but this is hardly possible.

My early education and training in mining was received in Germany, my native country. It is with deep regret that I refer to this, but no one can deny that industries in that country have been conducted with the greatest efficiency and managed by scientific experts.

It is pitiful to think of the autocratic government that has long held control in that country, and which has assumed to conquer the world by bloodshed.

Because of that autocracy in Germany, I was led, some years ago, to come to this country, and am pleased to say it is now my duty, as a citizen of the United States, to fight against the autocratic principles of my native land and help to establish the democracy that will eventually rule the world. The hope of such a democracy is founded on a broader education of the masses, not only in coal mining, but in all industries alike.

Staunton, Ill.

HENRY BOCK.

Power Required in Electric Haulage

Letter No. 1—While coal-haulage problems have always had a fascination for me, few that have come to my notice, in practice, have seemed nearly as interesting as the reply, in *Coal Age*, Nov. 17, p. 865, to an inquiry asking the power required to operate a given electric haulage. Kindly allow me to make a few comments on the reply given to this question.

It is estimated that the locomotive will require 4 $\frac{1}{2}$ hp. for its operation, which is equivalent to $4\frac{1}{2} \times 0.746 = 33.155$ kw. It is stated, further, that the locomotive is capable of hauling a loaded trip weighing 55 tons and consisting of 21 two-ton cars, making the total weight of coal hauled per trip 42 tons. Hauling at the rate of 6 miles per hour, it is calculated that the hauling capacity of the locomotive is $6 \times 42 = 252$ ton-miles per hour.

SUGGESTION THAT DOES NOT APPLY

It occurs to me that this estimate would be correct, provided the locomotive hauled the loaded trip back into the mine. I have always understood, however, that the return trip is composed of empty cars instead of loaded ones. If this is the case, I fail to understand why the machine is, here, estimated to haul six loaded trips 1 mile in 1 hour, at the given speed.

Allow me to suggest that this locomotive can haul three loaded trips and three empty trips in the time given. This, however, would double the cost for current, as based on the output. I have figured that the cost of current for a single trip would be 11.052c., which, divided by the 42 tons of coal hauled, would make the cost 0.263c. per ton-mile, or a little over 1c., instead of 0.13c., or about 1c. per ton-mile, as estimated in the reply to this inquiry.

CORRECTING THE ESTIMATED COST OF HAULAGE

Again, there seems to be some error in applying this estimated cost of haulage, practically, to ascertain what would be the entire expense of hauling, say 1000 tons of coal per day. The reply states that the expense of hauling this output would be $1000 \times 0.0013 = \$1.30$ for current alone. It is then suggested: "To this must be added, say 10 per cent. for loss in transmission and the usual overhead charges, such as wages of motorman and helper, cost of repairs and upkeep, etc." And the total cost is then put at "about \$1.50 per ton-mile."

Evidently, the intention in this reply was to estimate the cost for current alone, with a reasonable addition for loss in transmission, as about \$1.50 for hauling 1000 tons of coal a mile; but, as stated, to this must be

added the wages of the men and expense of repairs, etc. I estimate there will be required one motorman, say \$4; a triprider, \$3, and counting interest, repairs and depreciation, say about \$12.50 per day.

On this basis, the cost of hauling 1000 tons of coal a distance of 1 mile would be about \$21 per day. If the further expense of handling this output is considered, it may be necessary to add, say 75 per cent. for overhead charges, which would bring the entire cost up to about \$36.75, or 3.675c. per ton-mile.

Philadelphia, Penn.

FRANCIS A. POCOCK.

[The suggestion of our correspondent that the editor's reply to this inquiry did not consider the hauling of the empty cars back into the mine is incorrect. Owing to the fact that the empty trip is run into the mine on a down grade, practically no current is required after it has been once started. For this reason, the estimate of 0.13c., or practically 1c. per ton-mile, for current alone without the later additions, is correct.

It is true, however, as the correspondent surmises, that the application of this rate to the haulage of 1000 tons of coal 1 mile was in error when stating: "Perhaps, a fair estimate of the cost of hauling under the assumed conditions would be about \$1.50 per ton-mile." This amount would only cover the cost of current, with a reasonable addition for loss in transmission. The correspondent's estimate of the additional cost for wages of motorman, triprider and other overhead charges is practically correct.—Editor.]

Letter No. 2—Referring to the inquiry regarding the cost of power in electric haulage, *Coal Age*, Nov. 17, p. 865, permit me to say that the estimated cost of 13c. per ton-mile exceeds even that of mule haulage, which generally ranges from 10 to 12c. per ton-mile. It may interest readers of *Coal Age* to know that the Berwind-White Coal Co. recently estimated the cost of hauling its output with a Baldwin-Westinghouse locomotive at 1c. per ton-mile, which was said to cover the total expense of haulage.

In the Chicago tunnel electric locomotives performed the haulage for six weeks at a cost of 37c. per ton-mile, including all expenses. My duties have brought me in touch with the operation of 6000 electric mine locomotives, and I have never known the cost of operation to exceed 3c. per ton-mile. This experience was gained from 16 years of work in the mining department of the Baldwin-Westinghouse Co., making a total of 30 years' work in and around mines.

ESTIMATING THE TONNAGE HAULED IN ONE DAY

In the reply to the inquiry to which I have referred, the average speed of hauling is taken as 6 miles per hour, which would make the time for a round trip when the length of haul is 1 mile, $(2 \times 5280) \div 528 = 20$ min. Then, allowing, say 8 min. as the time lost in switching, at both ends of the haul, the total time of making a round trip would be 28 min. In that case it would be possible to make 17 trips a day, which would produce an output of $17 \times 42 = 714$ tons, instead of the 1000 tons assumed.

Regarding "tractive effort," my experience in the Baldwin Locomotive Works is that the tractive effort of an electric mine locomotive can be taken as 30 per

cent. of the weight on the drivers. The frictional resistance of electric locomotives, after about three days' service, commonly is estimated as ranging from 10 to 12 lb. per ton, while the frictional resistance of roller-bearing cars is taken as from 6 to 8 lb. per ton, in service. Estimating 30 per cent. of the weight on the drivers as being the tractive effort of a locomotive does not consider sanding the rails. Sand is only used on wet rails and to overcome the starting effort of a loaded trip, which is taken as from 5 to 10 lb. more than the tractive effort when running.

By actual test, a tractive effort of 47 per cent. of the weight on the drivers may be secured on a well-built mine locomotive with long wheelbase and a short overhang. But, when estimating the pull of a steam locomotive on wet or snow-covered tracks, it is customary to take the tractive effort, as here assumed, as one-sixth of the weight on the drivers. G. W. HAMILTON.

Norton, Va.

[This correspondent should read more carefully our reply to the inquiry in question, where it is plainly stated, "The expense of hauling coal, under the assumed conditions, would be $33.155 \div 252 = 0.13$ c. per ton-mile." This is slightly in excess of 1c. per ton-mile and, as explained in the previous letter, refers to the cost of current alone, without any addition for loss in transmission and overhead charges. Making these additions, the cost of haulage, under the assumed conditions, would not much exceed 3c. per ton-mile, which is common practice in locomotive haulage.

The application of this estimated cost per ton-mile to an output of 1000 tons of coal hauled a mile is merely a general example and has no reference to such output being hauled by a single locomotive, as our correspondent seems to intimate.

WHAT TRACTIVE EFFORT MEANS IN COAL MINING

In regard to the tractive effort of a mine locomotive, it can be said with truth that there is nothing more exasperating, in the operation of a mine, than to find that the machine has been estimated to haul a greater load than is possible under conditions as they exist in a large majority of coal mines. Mine tracks are often well worn; they are frequently wet and rendered slippery with the soft clay that underlies most coal seams.

It is possible that misunderstanding may arise from confusing the terms "tractive effort" and "drawbar pull." Safe mining practice estimates the drawbar pull of a locomotive as 25 per cent. of the weight on the drivers, for steel wheels on steel rails, and 20 per cent. for cast-iron wheels on steel rails. The term "tractive effort," as here used, refers to the total available force exerted by the locomotive at the circumference of its drivers, which cannot exceed the adhesion of the wheels to the rails; and it is safe mining practice to estimate this as one-sixth of the weight on the drivers.

While not doubting the fact that, in certain standard tests, 30 per cent. of the weight on the drivers may be found available as tractive effort on clean, unsanded rails, we still claim that it is far safer to adopt a lower estimate, in coal-mining practice, and thereby avoid possible annoyance due to the failure of the locomotive to pull its estimated load under the unfavorable conditions that exist in coal mines.—Editor.]

Recovering Outcrop Coal by Stripping

Letter No. 2—I was interested in the suggestion offered by a central Pennsylvania miner, *Coal Age*, Oct. 27, p. 737, regarding the recovery of a strip of outcrop coal 5 miles in length and 100 ft. in breadth, the coal having a thickness of 6 ft. and being overlaid with a cover varying from 15 to 25 ft. in depth.

A common rule for judging the feasibility of stripping a bed of coal is to allow for the removal of three tons of overburden for each ton of coal uncovered. This rule is, of course, only approximate and will vary with the quality and market value of the coal and the character of the overburden to be removed and the price to be paid for labor.

However, it is interesting to note from the calculations made by H. B. Miller, in his letter, *Coal Age*, Nov. 24, p. 902, that for every 4500 cu.yd. of material removed in a day there is 1400 tons of coal exposed and made available for mining. Estimating the overburden to weigh 1 ton per cu.yd., the ratio of weight of overburden removed, to the weight of coal mined, would be 4500:1400, or 45:14, which is slightly in excess of the ratio 3:1, given in the rule that I have just quoted.

I believe, however, that the plan of recovering this coal by stripping can be successfully accomplished. In my opinion, the days are approaching when coal operators will strip their outcrops when abandoning the mine, instead of leaving this coal in the ground as being unminable, owing to its having no roof suitable for mining.

JOSEPH F. LAWRENCE.

Tomhicken, Penn.

Shaft vs. Slope Opening

Letter No. 2—Replying to the inquiry of Thomas Harris, *Coal Age*, Sept. 29, p. 551, asking for the most desirable form of opening a mine in a practically level seam lying 118 ft. below the surface and having no outcrop on the property, I would say that a shaft has many advantages over a slope opening. One rarely experiences the results in practice that he has contemplated on achieving. It is possible to forecast the probabilities, but the actual working out of the proposed plan, as indicated by "Kappa," in his letter, *Coal Age*, Nov. 3, p. 775, will not always be realized.

However, I fail to agree with that writer, in the preference he expresses for a slope opening. While the arguments he presents in favor of a slope are good, it would seem that he must have had little or no experience in the sinking and operation of a shaft opening in coal mining. Referring to his statement that "the sinking of a shaft is generally more difficult than the driving of a slope," let me say that rock contractors and chargemen generally claim that it requires more skill to work in a tunnel than in a shaft.

The claim that "the work [of sinking a shaft] requires special equipment of tools and material, much of which cannot be utilized in the later operation of the mine," is hardly true, since practically the same tools are used in both operations, with the possible exception of the sinking pump sometimes employed when sinking a shaft. In regard to the material, this is estimated beforehand for completing the shaft.

Neither is there any difficulty in keeping a shaft plumb, which only requires a little attention to the plumb lines suspended in the four corners of the shaft. On the other hand, the sinking of a slope requires the setting of sights by a surveyor, which is an added expense.

As for the "uncoupling" of the cars required in shaft hoisting, this is a little matter that causes no loss of time, being done while the engineer is hoisting the previous car. The suggestion of placing a boy at the foot of a slope to attend to coupling the rope to the trips would not be considered for a moment by an experienced foreman.

Evidently "Kappa" has failed to consider the additional expense of T-iron, ties, steam and water pipes and electric wires, all of which require a greater length when installed in a slope instead of a shaft. There is also a far greater length of hoisting rope to be replaced every two or three years when hoisting in a slope. In my experience, the economical operation of a slope will require a footman, headman, pulleyman and two tracklayers, assuming the mine has a daily output of at least 1000 tons of coal.

GRADE IN SLOPE HAULAGE

Answering the question of Mr. Harris, in regard to the maximum percentage of grade for a slope opening, I will say that this depends wholly on the size of engine it is intended to employ in hoisting. A grade of 10 per cent. will require, in this case, a length of slope of $118 \times 10 = 1180$ ft. to reach the coal lying at a depth of 118 ft. below the surface.

In addition to this the operation of a colliery producing 1000 tons of coal a day will require a tipple, say 40 ft. in height, to provide for the necessary bins and screens for dumping the coal. This will necessitate the construction of an incline on the surface having a length of $40 \times 10 = 400$ ft., which makes the total length of slope haul, including the incline, practically 1600 ft.

Haulage on this slope will demand an experienced engineer. Just as much care is required in lowering an empty trip into the mine and controlling the descent of the cars as in hoisting a loaded trip from the mine.

In the sinking of a slope, much time and labor is expended in moving the pump forward as the work proceeds. There is also much trouble experienced from the water accumulating at the bottom of the slope. Finally, with the exception of T-rails, it is my experience that all material is handled with greater facility in a shaft than in a slope.

SOME DISADVANTAGES OF A SLOPE OPENING

The particular disadvantages of a slope opening are the following: Need of continually moving the pumps when sinking and providing a new sump to collect the water; loss of pressure in the transmission of steam to the bottom of a long slope; greater loss in electric transmission of power and more frequent inspection of the conducting wires or cables; increased cost of handling the water in a slope and the necessity of stopping work at the face when moving the pump; need of a long incline to land trips on the tipple; need of keeping a larger number of cars at the top and bottom of a slope than on a shaft bottom; and, finally, the

greater interference with the ventilation of the mine, caused by the movement of loaded and empty trips in a slope.

Permit me, in closing, to enumerate a few of the advantages in the sinking of a shaft and the later operation of a shaft mine, as follows: Greater safety; generally less water to handle and less liability to an increase of the quantity in wet weather; mine drainage is more commonly toward a shaft than toward a slope bottom; water handled more quickly and at less expense in a shaft than in a slope; fewer steam and water pipes required; less need of maintaining pumps as water can be hoisted in tanks with little inconvenience or delay; a large output of coal acquired more speedily and sustained more regularly; better control over the ventilation of the mine, which, in case of an explosion, can be restored more quickly in a shaft than in a slope; less need of miners walking long slopes, going to and from their work.

In certain slope mines where I have worked, the cost of mining coal has ranged from 15 to 25c. per ton more than at shaft mines operated by the same company. Speaking of walking long slopes, in the mines of the anthracite and bituminous districts, where I have been employed, the miners have always preferred being hoisted on the cage to walking the slope. In fact, in three mines where the second opening was a slope, the miners went on strike to compel the company to hoist them in the shaft.

FRED B. HICKS.

Kingston, Penn.

Clearing a Heading of Gas

Letter No. 1—Referring to the inquiry of a mine foreman who attempted to drive out a body of gas accumulated at the face of a heading by hanging a canvas in the return airway 90 ft. back from the face, it is worthy of note that he does not state that the experiment was a success, but simply says, "The idea, as far as moving the gas was concerned, seemed good."

It is quite reasonable to suppose that this experiment failed, as it could hardly be expected to do otherwise. Blowing into an air-tight bottle will not move the air from the bottle; and shutting off the return airway whereby the escape of air is prevented would have no effect to sweep out the gas from the face of a heading.

We frequently hang a canvas across an airway for the purpose of deflecting the air current into a cavity in the roof or other void place on the entry, but this is a different proposition from that of clearing gas from the face of a heading where it has accumulated.

I recall an instance where the roof fell in a breakthrough between two rooms, which gave an opportunity for gas to accumulate in the cavity formed in the roof. In order to sweep out this gas, I hung a canvas across the breakthrough with the result that the air current was forced to pass over the canvas and the cavity was kept clear of gas by that means.

The only way to remove gas accumulated at the face of a heading is to extend a line of brattice from the last crosscut to a point near the face, so as to compel the air to pass around the end of the brattice and sweep the face. If there is sufficient current passing and

the brattice does not leak too badly, the gas will be swept away from the place where it is lodged and carried out behind the brattice and through the crosscut into the return airway.

Where a room or heading runs to the rise, it is frequently difficult to remove gas generated at the face. In such a case, the brattice must be carried closer to the face of the coal so as to deflect the air against the gas. This is particularly true where gas is liberated freely at the face, because a higher velocity of the air current is then required at that point to cause it to sweep away the gas as quickly as it is generated. If the work is properly done, there is no difficulty in removing gas from its lodging place, but this cannot be accomplished by blocking off the airway, as described in this inquiry.

W. H. NOONE.

Thomas, W. Va.

Letter No. 2—In the inquiry, *Coal Age*, Nov. 10, p. 823, a mine foreman asked for the opinion of readers in regard to a method, which he claims seems good to him, of removing gas from the face of a heading by bratticing off the return air-course at a point 90 ft. back from the face. This would be a most unwise method to adopt, to say the least. It would be like attempting to pour liquid through a funnel when the small end of the funnel is closed.

Allow me to outline my method of removing gas accumulated at the face of a heading. It is as follows: First, remove all the men from that section of the mine. Notify the fan engineer to remain at his post constantly. Choose a few competent and reliable men and equip them with safety lamps of an approved type already cleaned and filled. Having examined each lamp carefully, proceed at once into the mine, taking along brattice cloth, nails and tools, including a first-aid kit and some clay.

ALL WORK MUST BE DONE ON THE INTAKE AIR

Approach the place on the intake air, making frequent examinations for gas when nearing the face of the heading. Having reached the last crosscut next to the face, start to set a line of posts 5 or 6 ft. apart and about 2 ft. from the rib. Nail brattice boards at the top and bottom of these posts to support the brattice cloth or canvas. Close the crack between the lower board and floor with road dirt, and that between the upper board and the roof with clay. The canvas can be used single or double, as desired.

This work must all be done on the intake side and care must be taken not to proceed ahead of the air. Give plenty of time for the current to sweep away the gas as the brattice is extended toward the face. After tests with the lamp show that the gas has been removed from the heading, the entire mine must be carefully examined before permitting the men to enter for work.

If the air current proves too weak to remove the gas, it may be necessary to short-circuit the current from other sections of the mine so as to give the air sweeping the face of this heading a sufficient velocity to enable it to carry away the gas.

In closing, permit me to say that it seems strange that any mine foreman would suggest such a method for removing gas as that described in this inquiry.

Bracken, Penn.

ALFRED ENGELL.

Examination Questions

First Examinations under the New Law, Pittsburg, Kan., Nov. 10, 1917

(Selected Questions)

Ques.—What noxious gases are produced by fires and explosions of firedamp in coal mines?

Ans.—The principal gases generated by a mine fire are carbon dioxide (CO_2) and carbon monoxide (CO), the former being predominant when the supply of air is plentiful. As the air supply is decreased, there is an increasing amount of carbon monoxide produced and a correspondingly smaller amount of the dioxide is formed.

The explosion of firedamp, in a mine, produces a variable mixture of gases depending on the composition of the firedamp and the quantity of free air available. Assuming that the firedamp is composed mainly of methane and air, and there is a plentiful supply of air at hand, the gases produced will be, chiefly, carbon dioxide (CO_2), nitrogen (N_2) and water vapor (H_2O). When the explosion takes place in a limited supply of air, a variable amount of carbon monoxide (CO) will be produced, and there are frequently varying proportions of hydrogen (H_2) and some unburned methane (CH_4) remaining after the explosion.

Ques.—Describe the effect of the presence of coal dust in an explosion.

Ans.—The presence of coal dust floating in the air in which an explosion occurs has the effect to increase the quantity of carbon monoxide (CO) produced. The formation of considerable quantities of this gas extends the flame of the explosion and increases its intensity.

Ques.—What precautions should be taken to avoid the dangers that arise from the presence of coal dust in the mines of our state?

Ans.—Strict regulations should be enforced in regard to the cleaning up and loading out of all accumulations of coal dust on the roads and at the working face. All roads should be regularly sprinkled. The installation of a thorough sprinkling system is preferable to other methods of watering. Where machines are employed for cutting the coal, the coal cuttings or "bug dust," as it is called by the miners, should be carefully loaded out of the mine.

Where blasting is performed, the coal face and ribs of the working places should be sprinkled, for a distance of 50 or 60 yd. back from the face, before any shots are fired in the places. The use of stone dust sprinkled on the roads is advocated by some as a preventive of a disastrous coal mine explosion.

Ques.—Under what atmospheric conditions does mine roof fall most, and why?

Ans.—Changes in temperature and moisture, as conveyed by the air current circulating through a mine, are the chief causes that contribute to the disintegration and fall of roof strata. The alternate heat and cold, dry and moist condition, produce a disintegration

of the shale and slate forming the roof strata, in mines. The air current where these changes are most frequent is found to "cut the roof," particularly along the ribs of the rooms and entries. This effect is largely explained as due to the alternate absorption and escape of moisture from the pores of the strata and to the contraction and expansion caused by changes of temperature. Where steam pipes are conducted along passageways, the effect of the heat and moisture is most observable. Changes of barometric pressure are sometimes claimed to affect the roof of mine workings. This, however, is doubtful, except under extreme conditions.

Ques.—What are the principal precautions that may be taken against explosions of gas and fires in mines?

Ans.—In respect to gas, the most important consideration is the thorough and frequent examination of all working places and abandoned areas and falls where gas is generated, and conducting the air current in such a manner as to prevent the accumulation of gas in dangerous quantities. It is important to maintain a reliable and ample circulation of air throughout the mine and to adopt and use the most approved type of safety lamp where it is necessary to work the mine with these lamps.

No accumulations of dust should be permitted on the roads or in the working places of a gaseous mine, and an efficient sprinkling system should be installed for sprinkling all roads and working places. Where blasting is performed, permissible powder should be used and all shots should be charged and fired by competent shotfirers after the men have left the mine.

In respect to fires, strict regulations should be made and enforced in regard to the examination of the workings after shots are fired, to see that no gas feeders are burning in the coal. All electrical installations should be made by a competent electrician, and the use of open lights in stables and pumprooms should not be allowed.

Ques.—What precautions are necessary on haulage-ways, for the safety of drivers and others?

Ans.—Assuming animal haulage is employed, as indicated by the mention of drivers in this question, the haulage roads should be laid out as straight as possible and there should be at least 2 ft. of clearance between the side of the car and the rib, on the same side of the entry, throughout its entire length. As far as practicable, no doors should be permitted on the haulage roads. In any event, a door should never be placed at the foot of a sharp grade. The grades of haulage roads should be as light as possible. The roads should be well ballasted and the track maintained in good condition.

Ques.—The water gage, in a certain mine, reads 2.5 in.; what is the ventilating pressure?

Ans.—The ventilating pressure, in this case, is $2.5 \times 5.2 = 13$ lb. per square foot.

Coal and Coke News

For the Busy Reader

Coal for domestic purposes in London has been rationed and prices fixed, ranging from \$10.25 a ton for best grade down to \$8.75 for poorer grades.

On protests being substantiated that Detroit and Atlanta were not receiving sufficient coal for their immediate requirements, the Fuel Administration directed to those places sufficient shipments to meet the situation.

Mines supplying the Du Pont Powder Co.'s plants have been instructed by the Fuel Administrator to deliver their full quota so as to insure an adequate supply of fuel for this important contributor to the Government's munition supply.

Italy needs 800,000 tons of coal to run her railroads, munition factories and war industries. Cooking is done with gas or charcoal, the latter a native product. The prices of charcoal, however, average \$50 a ton retail, due partly to scarcity and partly to speculation.

Prices have been unified in the Ohio and West Virginia sections of the Pomeroy field. The prices fixed are: Run-of-mine, \$2.35 per ton; prepared sizes, \$2.60; slack or screenings, \$2.10. The former West Virginia prices were \$2 for run-of-mine, \$2.25 for prepared sizes and \$1.75 for slack or screenings.

If the plan under consideration by the Fuel Administration becomes effective, every school in the Northern and Central states will close during January and February. A tremendous saving in coal could be accomplished by continuing school sessions one month later this spring and opening one month earlier in the fall.

A report early last week from Albert H. Wiggin, the state fuel administrator, that New York was facing a considerable shortage of coal, put L. A. Sneed on his mettle for several days in securing the necessary supplies for the metropolis. The matter has been straightened out and New York is again assured its proper pro rata of coal.

Forced at least to believe that Canada is not taking action calculated to safeguard its fuel supply, a warning has been sent to the Canadian Fuel Controller. He was advised that Canada is expected to resort to the same measures to save coal as are being adopted in the United States. So far as coal supply goes Canada has been allotted the same proportion of coal as similarly situated portions of the United States.

Prices for bituminous coal at the mines in New Mexico were raised on Dec. 1 by the Fuel Administration. The new classification separates the New Mexico field into three groups and sets a different price for each. The former prices for all of New Mexico were: Run-of-mine, \$2.75; prepared sizes, \$3.25; slack or screenings, \$2. The new prices are: Sougarte field, \$3.45, \$4.45 and \$2.45; Monroe and Gallup fields, \$3.50, \$4.95 and \$2.45; Carthage and Cerrillos fields, \$4.50, \$3.50 and \$4.

An Amsterdam dispatch says England may take the place of Germany in furnishing fuel to Holland, which flatly refused the proposal that Dutch bankers give large credits to the German government. England has offered to deliver 200,000 tons of coal monthly at a net price, including freight, of \$20 a ton, against the old German price of \$14.40 and the new one of \$36. The only obstacle to Holland's acceptance of England's offer is that in the past she has received 350,000 tons of coal a month from Germany.

HARRISBURG, PENN.

The trouble in the Pittsburgh district appears to be more with the car supply than with the coal supply. It has been announced that greater use than heretofore is to be made of the Ohio River, not only for shipments of coal, but for general merchandise shipments, and especially for the transport of supplies needed in the conduct of the war. Government officers have recently investigated the possibilities of river transportation and have formulated plans which is now proposed to carry out.

At least temporary relief from the car famine and more rapid progress in the solution of many other grave problems which the mining men of the Central bituminous district are facing is expected as the result of the action of the Low Volatile Coal Operators' Association, composed of some of the biggest operators in the central district, in joining the National Coal Operators' Association. There is more optimism among the coal operators now than there has been in a long while. The National association has taken the car-supply matter into its own hands, and interesting developments are expected before long. The car supply for the last four weeks has been less than 8 per cent., and many of the mines in the central part of the state have had to close down.

With the fuel situation in a condition where mills doing Government work are hard pressed at times for coal, charges of what in effect looks like favoritism on the part of the Pennsylvania R.R. for the Berwind-White Coal Mining Co. have been made by miners and shippers of coal on the South Fork branch of the Pennsylvania R.R.

It is reported that figures to substantiate the allegations have been laid before William Potter, fuel administrator of this state, and that representations have been made to the car service committee of the Railroads War Board in Washington. It was further announced on Nov. 27 that an appeal had been made to the Pennsylvania R.R. for relief, with the alternative of having the whole situation laid before the Interstate Commerce Commission.

The issue has been raised by operators on the South Fork branch specifically on the figures for car distribution during the 17 working days between Nov. 1 and Nov. 20, inclusive. The South Fork mines produce a high grade of low-volatile steam coal.

According to the official ratings of mines on the South Fork branch, the Berwind-White Coal Mining Co. is entitled to 386 cars per day, and all other operations, lumped, are entitled to 396 cars daily. In other words, the Berwind-White plants should get 49.40 per cent. of the daily rating of 782 cars and the remaining mines should get 50.60 per cent.

As a matter of fact, competing operators charge that the Berwind-White mines have been getting more than 60 per cent. of all the cars placed on the South Fork branch, while the allotment for commercial purposes to the remaining mines is but 12.90 per cent. Detailed figures of distribution have been laid before the state fuel administrator.

Operators maintain that though the Pennsylvania R.R. has had a freight congestion resulting in a shortage of cars, the trouble has been in a lack of motive power, and that such motive power as has been available should have been used to give an approximately equal coal car service to both the Berwind-White and the competing companies.

On the subject of anthracite for ships passing through the war zone, there is considerable interest among the coal operators. Merchant skippers have been eager to get hard coal, because it would save them something like 1½ per cent. insurance, but the hard coal companies have declined to sell except upon Government requisition or approval. The whole question is in the hands of the Fuel Administration at Washington, and the fuel authorities there have been consistently rejecting all requests for anthracite made by merchant vessels.

It is pointed out that the general adoption of hard coal as ship fuel in the war zone would probably lead to an early annual consumption of 10,000,000 tons, or even more. That would be more than 10 per cent. of the total hard coal tonnage, and the question as to whether it is more desirable to give that coal to the domestic consumer or allow it to go into bunkers is one which the national authorities will have to determine.

The movement to have the United States Government restrict the number of saloons in the anthracite coal region, and to limit the selling of intoxicants to bona fide hotels, is growing, and as the winter advances and the necessity of a greater coal supply becomes more apparent, there is little doubt in the minds of those who know President Wilson that he will take the steps needed to increase the efficiency of mine employees and prevent saloon keepers from putting needless temptations in the way of those whose labor is needed to the saving of the nation.

It is being pointed out in letters to the committee on public safety that the proper time to make this restriction of saloons would be at the annual session of the license court in January. It is planned to have Federal licenses refused to all unnecessary saloons. If announcement were made of this purpose, it would prevent saloon keepers in the coal regions from spending money uselessly for state and county licenses.

The anthracite section of the American Institute of Mining Engineers, one of the most distinguished and influential organizations in the hard coal fields, banqueted at the Westmoreland Club on Nov. 24, entertaining as the chief guest of honor P. M. Moore, of St. Louis, national president, and a widely known expert in the engineering field. About 60 guests were present, including the leading coal engineers of all the coal companies from Forest City to Pottsville.

Papers of particular interest, supplemented by lantern slides, were read. Robert Hobart, superintendent of machinery and construction for the Lehigh Coal and Navigation Co., presented "The Relative Economy of Steam and Electricity in the Operation of Coal Mines." He compared the cost of power at No. 11 colliery, Lansford, operated by steam, and later when operated by electricity, and showed a saving of nearly 50 per cent. in favor of electricity. The paper was exhaustively discussed by Messrs. Huber, president of the Lehigh and Wilkes-Barre Coal Co.; Zerbey, president of the Kingston Coal Co.; Quin, vice president of the Susquehanna Collieries Co., and Norris, consulting engineer and president of the local branch.

W. P. Frey, fuel engineer of the Lehigh Coal and Navigation Co., spoke expertly on "Briquetting Anthracite Coal." Mr. Frey gave in detail an account of the present process in use by his company, and outlined plans for a new plant. He went into details on the cost of operation. The discussion led to a consideration of the possibilities of burning anthracite slush. The process was explained by M. S. Hachita, chemist of the Lehigh Valley Coal Co., and by Mr. Frey, both of whom have been conducting experiments. Both reported considerable success with mixtures up to 50 per cent. of soft coal and anthracite slush, and full satisfaction with mixtures of from 65 to 85 per cent. bituminous with 35 to 25 per cent. slush. It was stated that the matter had actually been taken up by the fuel controller, in view of the appalling shortage of anthracite coal.

The entire meeting was an unqualified success, from both the professional and the social standpoint, and takes its place as one of the outstanding features of the history of the institute. The American Institute of Mining Engineers, universally recognized as the national mining organization, was founded in Wilkes-Barre in 1871.

PENNSYLVANIA

Anthracite

Mahanoy City—With a view of getting a greater coal production, the division and district superintendents, mine foremen, fire-bosses and section bosses met on Nov. 27

and inaugurated a campaign among mine workers for a longer working day. Although 8 hours constitute a day's work for miners, many make big wages working 4 and 5 hours and then leaving the mines. It is the intention of the coal companies to endeavor to persuade the men to remain the 8 hours, paying them per car of coal mined.

Larksville—A cave occurred along the highway on Nov. 28, at No. 3 colliery of the Delaware & Hudson, when a portion of the surface dropped into an old working to a depth of several feet, exposing the water and other mains, which, however, remained intact. Mine officials are trying to ascertain conditions inside, with a view of placing barriers to prevent the contemplated fill from washing out.

Carbondale—Residents of Lackawanna County have petitioned Dr. Garfield, Federal Fuel Administrator, to compel the Delaware & Hudson Coal Co. to dispose of about 350,000 tons of coal stored in the company's yards south of this city, and relieve the coal shortage that prevails in that county. The explanation of the Delaware & Hudson company is that it is not able to move the coal from the storage plant because of the shortage of cars.

Harrisburg—The Federal fuel committee of Dauphin County, acting with a committee of local coal dealers, issued an order on Nov. 30 making the use of coal cars in Harrisburg mandatory. Fuel Administrator Hickok, in announcing the order, said that not more than 30 days' supply will be sold to any one person and that only one ton at a time will be sold a purchaser.

Shamokin—Responding to an appeal of the Fuel Administrator and mining officials, the employees of the Susquehanna Collieries Co.'s three washeries and the men of the Buck Ridge Coal Co. for the first time in the history of the region worked on Sunday, each operation establishing new tonnage records for a single day's work. A movement is on foot to have the collieries throughout the entire region work on Sundays, and a goodly number of miners and laborers have agreed to comply during the anthracite fuel famine. It is said by mine officials that an effort is to be made to operate some of the collieries by night if assurances are given by the railroad companies that they will be able to supply the necessary cars.

Hollywood—Pardee Brothers & Co. have started to drain the water out of the abandoned No. 1 workings, which have been idle for many years. Owing to the great demand for coal, the lower veins at No. 1 colliery, which remained untouched owing to the difficulty of blasting them out in the earlier days of the anthracite industry, will be tapped.

Beaver Brook—An electrically operated pump, incased in a waterproof cement compartment and displacing 10 smaller pumps, will be installed in the mines of the C. M. Dodson Coal Co. The men thrown idle through the change will be given places at other work. The pump is one of the largest in the Lehigh coal fields and can be run with power supplied from the surface, no matter how high the water gets in the gangways.

Bituminous

Cheat Haven—Two openings of the Connellsburg Big Vein Coal Co. are expected to add considerably to the tonnage on the Fairmount branch of the Baltimore & Ohio. The Horton No. 1 mine, opened about a year, is averaging five steel hoppers daily.

Mercer—The Butler-Mercer Coal Operators' Association has been formed by the coal producers in the two counties named, with H. J. Filer, of Sharon, as president.

Virginia

Norton—The hundreds of employees of the Norton Coal Co., R. I. Cawthorne, president, gave an exhibition of real patriotism last week. The coal mines were forced to shut down for a number of hours owing to an accident at the power plant, but when the machinery was again started, the miners volunteered to work all night in order to make up for the loss in the coal production incurred by the unavoidable accident.

Alabama

Birmingham—Owing to the strikes in east Tennessee and Kentucky, Atlanta, Ga., is threatened with a serious coal famine. A plea was made to coal operators here, and Atlanta has been given assurance that it will receive a little fuel. In fact, two or three local concerns are preparing to ship several carloads daily for a while.

Chief State Mine Inspector W. D. Nesbit states that several new mines will be opened early next year in Tuscaloosa, Jeff-

erson and Walker Counties. It is hoped that these mines will help to relieve the coal shortage that exists all over the state. Some districts are already obtaining permission to fell timbers where it was heretofore forbidden, and the public is being urged by local fuel administrators to resort to wood wherever possible.

Sayreton—Fire destroyed the tipple and coal washer at the Sayreton mine, property of the Republic Iron and Steel Co., recently, and the loss is estimated at from \$75,000 to \$100,000. The fire originated in the checkroom. Officials of the company say the tipple will be rebuilt in a few weeks. However, about 400 men are thrown out of work at present.

Kentucky

Middlesboro—Guards have been placed on coal mines in Bell County, Kentucky, following the incendiary fire which damaged the plant of the Climax Coal Company.

Lexington—According to information received at the office of the Kentucky Mine Inspection Bureau, 8000 tons of slack coal belonging to the Elkhorn Piney Coal Mining Co., at Weirsburg, Floyd County, Kentucky, is on fire and will be a total loss. The fire is attributed to spontaneous combustion. Because of inadequate facilities it was impossible to move any of it. According to F. C. Horton, assistant mine inspector, just returned from an inspection trip to Floyd County, the company has 90,000 tons of coal stored in its mines. The company has been operating seven mines for the last four years and has stored most of the coal while awaiting completion of a railroad spur, which is to be finished about Feb. 1. One mine has a store of 60,000 tons, the remainder being distributed among the other mines. A 50-car load daily shipment is to be made when the railroad connection is established.

Ohio

Athens—In a riot resulting from threats said to have been uttered by a foreigner to blow up a mine at Modoc, where many American miners are employed, the foreigner was killed, and another foreigner with him was placed under arrest. It is not known who did the killing, as there was general shooting following the threat to blow up the mine.

Illinois

Christopher—Eighteen men are believed to have perished in an explosion Thanksgiving night in Mine No. 11 of the Old Ben Corporation. Four bodies had been recovered up to last Saturday night. Although hope of finding any of them alive had been abandoned, rescue teams, working in shifts, continued the search. They are under the direction of Evan John, State Director of Mines and Mining. Neither he nor the officers of the company have determined the cause of the explosion, which occurred on the 600-ft. level. D. W. Buchanan, of Chicago, president of the company, estimates the damage to the mine at \$150,000 to \$175,000. He declares that the mine was sprinkled and inspected in strict accordance with the law. The mine was electrically equipped throughout and entirely broke all southern Illinois records in the number of tons hoisted in 8 hours. The force of the explosion was very great. It was felt 20 miles away. Both cages were blown out of the shaft and the tipple was wrecked. The steps in the air shaft were blown out. Rescue crews had to be let down in buckets. The mine employed 700 men. That more were not below was due to the Thanksgiving holiday.

Carrier Mills—The top works of Wasson Coal Co.'s mine No. 2 here were recently destroyed by fire. This was caused by the placing of an oil can on a stove for the purpose of warming the oil. It became overturned and caught afire. The loss is estimated at about \$20,000 and 250 men will be idle until a temporary tipple can be erected.

Murphysboro—William A. Moore, a miner from Coulterville, was on trial before United States Commissioner Fox, for threatening, it is alleged, to blow up the West mine at Coulterville. He also made remarks, it is claimed, against the Government and in a general way caused dissatisfaction among his coworkers. He was held for Federal Grand Jury.

Athens—The old No. 2 mine here, which was dismantled and abandoned six years ago, is being reequipped. The machinery of the old South Mountain mine at Petersburg has been purchased and is being installed. At the time the old mine was dismantled it was one of best equipped in central Illinois. It was abandoned because the company operating it was not able to

get possession of adjoining coal lands. Scarcity of dwellings will necessitate tenements being erected.

Taylorville—The Peabody Coal Co. is beginning to sink a new mine here which will be run entirely by electricity. The coal will be hoisted by an electrical engine and no other kind of power will be used about the mine. Harrison Easley, until recently connected with the Hillsboro Coal Co., has been engaged to superintend the sinking of the new mine.

Petersburg—A vein of 6-ft. coal has been struck at the coal shaft north of this city owned by the Klingbiel Brothers. The new mine is expected to put Petersburg back on the coal map. A few years ago there were six mines here. Lately the only producing mines have been the two Mallergram pits.

Middletown—Johnson Brothers, operating the Johnson Valley coal mine, have erected a tent at the mine for the shelter of farmers and teamsters who come from a radius of 15 miles and stay all night in order to get a good position in the line of wagons next morning. Sometimes as many as 30 wagons are in line at the mine when work begins at 7 a.m.

Bellefonte—Adolph Knobeloch has been appointed chairman of the St. Clair County Fuel Committee. The other members are Victor Gauss and E. A. Daley. The committee has jurisdiction over the entire county except East St. Louis and Caseyville, O'Fallon and Lebanon townships.

Alton—Installation of mechanical loading devices is under way at the new municipal dock here, for transferring coal and other freight from cars to upper Mississippi steamboats.

Beardstown—The Cass County Fuel Committee is arranging to have all coal that is shipped here delivered at a central supply station, to insure an equitable distribution of the supply among the dealers and consumers. The latter will order through their regular dealers, but delivery will be from the central station and will be controlled by the committee.

Personals

Franklin W. Shepard, of Birmingham, Ala., has resigned his position as safety inspector for the American Cast Iron Pipe Co., and has assumed like duties with the Woodward Iron Company.

Prof. H. H. Stock, head of the department of mining engineering, University of Illinois, has been appointed a member of the Advisory Council of the Illinois Section of the United States Fuel Administration.

P. N. Place has resigned his position as division superintendent for the Lackawanna R.R. at Scranton to become traffic manager of the Hartmann-Blanchard Coal Co., of Binghamton, with New York offices at No. 50 Church Street.

James R. Dubose, who has been chief coke inspector for the Tennessee Coal, Iron and Railroad Co., of Birmingham, Ala., has gone to Cleveland, Ohio, to take charge of a by-product and benzol plant of the National Tube Company.

J. W. Powell, superintendent of Nos. 204 and 205 mines for the Consolidation Coal Co., located in the Elkhorn Division, Jenkins, Ky., has resigned to accept a similar position with the Consolidated Mining, Smelting and Power Co., of Vancouver, B. C.

Robert Taylor, Jr., resident manager of the Hocking Valley Products Co., of Columbus, Ohio, has been commissioned a first lieutenant after a course in intensive training at Ft. Benjamin Harrison, Indianapolis. He has been assigned to the field artillery at Camp Sherman, Chillicothe.

Erskine Ramsey, vice president of the Pratt Consolidated Coal Co., of Birmingham, Ala., is reported, will be asked to accept a commission as Colonel of Engineers in France and will have charge of rebuilding the mines devastated by the Germans, but which have recently been recaptured by the French. Mr. Ramsey bears the reputation of being one of the best engineers in the country and can do the greatest work with the least equipment. He has studied the European method of mine operation as a special commissioner of the Bureau of Mines, so that he is especially fitted for the work.

Harry H. Johnson, representative of the Electric Service Supplies Co., of Chicago, Ill., is one of the best known young men in the coal-mining districts of Illinois and Kentucky. Mr. Johnson's rise in the business world, since he joined the company in 1904, has been one of steady progress. Close application to work and an earnest effort to please soon brought his employers to recognize his ability, and his promotions, from office boy through all departments, to a responsible position as salesman, was his reward. In the nine years



HARRY H. JOHNSON

he has traveled the states of Illinois and western Kentucky it has been his privilege and pleasure to associate himself with many owners and operators, to whom it has been possible for him to be of personal and valuable service in many ways, a fact that has earned for him a reputation for honesty and integrity. Mr. Johnson enlisted as a private in the National Army, Sept. 15. Within two weeks thereafter he was appointed Acting Corporal and 30 days later received his second advance. He is now Sergeant of Company C, 343d Infantry, located at Camp Grant, Rockford, Ill. He will give a good account of himself when he gets "Over There."

Obituary

Joseph Greason, 81 years old, president of Greason, Son & Dalzell, and a former president of the Brooklyn Coal Exchange, died at his home in Brooklyn, on Nov. 28 from the ailments of old age. Mr. Greason was a resident of Brooklyn for about 45 years and prior to entering the coal business was a wholesale druggist in Manhattan.

Frederick E. Saward, editor of "The Coal Trade Journal," died Dec. 4 at his home, 64 W. 77th St., New York City. The deceased was born in Gravesend, near London, England, on May 12, 1846, and had resided in New York since he was 7 years of age. Mr. Saward, who was well known to the coal industry, founded "The Coal Trade Journal" on April 21, 1869, and at one time was in the coal business in Brooklyn. He was a member of the American Trade Press Association, and was its president for one term.

P. J. Rogers, president of the board of convict inspectors of Alabama, died at his home in Ensley, a suburb of Birmingham, Ala., on Nov. 30, after an illness of about three weeks. Mr. Rogers was 62 years of age and had been in bad health for a number of years, suffering from a heart affliction. Mr. Rogers was at one time superintendent of the Pratt City Division of the Tennessee Coal, Iron & Railroad Co., during the greater portion of which time state and county convicts were employed in producing coal at these mines. Mr. Rogers was especially proficient in the working and management of this class of labor.

Publications Received

"Annual Report of the Department of Mines of New South Wales for the Year 1916." Illustrated, 213 pp., 8 $\frac{1}{2}$ x 13 in.

"Approved Electric Lamps for Miners." By H. H. Clark and L. C. Ilsley. Department of the Interior, Bureau of Mines. Bulletin 131. Illustrated, 59 pp., 6 x 9 in.

"Absorption of Methane and Other Gases by Coal." By S. H. Katz. Department of the Interior, Bureau of Mines. Technical Paper 147. Unillustrated, 22 pp., 5 $\frac{1}{2}$ x 9 in.

"The Determination of Moisture in Coke." By A. C. Fieldner and W. A. Selvig. Department of the Interior, Bureau of Mines. Technical paper 148. Unillustrated, 12 pp., 5 $\frac{1}{2}$ x 9 in.

"The Clays of the Piedmont Province, Virginia." By H. Ries and R. E. Somers. Virginia Geological Survey, University of Virginia. Bulletin No. XIII. Illustrated, 85 pp., 7 x 10 in.

"Monthly Statement of Coal-Mine Fatalities in the United States, July, 1917." Compiled by Albert H. Fay. Department of the Interior, Bureau of Mines. Unillustrated, 27 pp., 5 $\frac{1}{2}$ x 9 in.

"Men Who Received Bureau of Mines Certificates of Mine Rescue Training—July 1, 1914, to June 30, 1916." Compiled by D. J. Parker. Department of the Interior, Bureau of Mines. Technical Paper 167. Unillustrated, 66 pp., 5 $\frac{1}{2}$ x 9 in.

Recent Coal & Coke Patents

Coking Furnace. H. G. Stone, Chicago, Ill., 1,243,776. Oct. 23, 1917. Filed June 23, 1915. Serial No. 35,747.

Controlling Valve Mechanism for Furnace Stokers. G. W. Wood, Camden, N. J., 1,243,237. Oct. 16, 1917. Filed Jan. 8, 1917. Serial No. 141,228.

Means for Automatically Opening Mine Doors. A. M. and J. O. Hooper, Pittsburgh, Kan., 1,242,190. Oct. 9, 1917. Filed July 5, 1917. Serial No. 178,809.

Dump Car. J. O. Neikirk, assignor to Rodger Ballast Car Co., a corporation of Maine, 1,242,226. Oct. 9, 1917. Filed July 15, 1916. Serial No. 109,568.

Automatic Stoker. J. R. Fortune, assignor to Murphy Iron Works, Detroit, Mich., 1,243,055. Oct. 16, 1917. Filed Nov. 11, 1914. Serial No. 871,480.

Furnace. H. A. Poppenhausen, assignor to Green Engineering Co., East Chicago, Ind., 1,243,868. Oct. 23, 1917. Filed Dec. 6, 1916. Serial No. 135,467.

Mining Machine. C. E. Davis, assignor to Goodman Manufacturing Co., Chicago, Ill., 1,244,178. Oct. 23, 1917. Filed May 25, 1914. Serial No. 840,652.

Ash-Conveying System. A. P. Strong, assignor to Green Engineering Co., East Chicago, Ind., 1,243,893. Oct. 23, 1917. Filed Mar. 6, 1917. Serial No. 152,633.

Automatic Furnace Stoker. G. A. Kohont, assignor to Kersto Corporation, Chicago, Ill., 1,243,186. Oct. 16, 1917. Filed Feb. 25, 1916. Serial No. 80,358.

Construction and Development

Birmingham, Ala.—The Brookside-Pratt Mining Co. has increased its capital stock from \$20,000 to \$300,000.

Binghamton, N. Y.—The Blanchard-Bunnell Coal Co. has filed notice of an increase in its capitalization from \$10,000 to \$50,000, for expansion.

Gary, Ky.—The United States Coal and Coke Co., which several months ago purchased 20,000 acres of coking coal lands, has completed a large part of its development work.

Pottsville, Penn.—The Buck Run Coal Co. has inaugurated operation in its new coal breaker, construction of which was recently completed, and which replaces the one destroyed by fire.

Perth Amboy, N. J.—The Port Reading Railroad Co. has awarded a contract for the erection of a new coal elevator and suspended coal bunker at Port Reading, at a cost of \$13,686.

Rochester, N. Y.—The Rochester Railway and Light Co. has awarded a contract to the Turner Construction Co., 242 Madison

Ave., New York, for the construction of new coal bunkers at its plant, to cost about \$75,000.

Philadelphia, Penn.—The Philadelphia & Reading Ry. has awarded a contract to the Roberts-Schaefer Co., Chicago, Ill., for the construction of a new coal pocket at its works at Erie Ave. and Lawrence Street. The structure will be of concrete and steel and cost about \$170,000.

Columbus, Ohio.—The Buckeye Coal and Railway Co. has opened three new mines, out of a proposed group of eight, which are located on a four-mile spur, which is being completed in the Bailey Run district of the Hocking Valley. It is expected to have all of the eight mines loading within a short time.

Providence, Ky.—The Wynn Coal Co., incorporated with \$20,000 capital by D. B. Baker, T. M. Baker, John D. Wynn and others, has started an opening on a 50-acre tract east of town. The operation will be a slope mine and work the No. 11 strata. A spur track will connect with the Louisville & Nashville.

Mauch Chunk, Penn.—M. A. Butler and N. D. Cortright, who have leased the Switchback R.R., have also leased the DeReamer mine, on Mt. Pleagah Mountain, along the above railway, and will shortly resume operations. The mine was abandoned some years ago and contains a large vein of excellent coal.

St. Louis, Mo.—The St. Louis Coke and Chemical Co., a subsidiary to the American Coke and Chemical Co., of Chicago, will build a coke plant to cost more than \$1,000,000. The exact location of the plant has not yet been selected. L. E. Fischer, formerly general manager of the Illinois Tract Co., will be in charge of the plant.

Birmingham, Ala.—Articles of incorporation have been filed by the Central Alabama Coal Co., with a capital stock of \$350,000. The new company will take over the properties of the Central Coal Co., which has developed mines at Kimberly, in the northern part of Jefferson County, and it is stated will acquire other valuable undeveloped coal properties in central Alabama. H. J. Falk is president; L. Schulhoefer, vice president; J. P. Pearson, secretary-treasurer. Sydney J. Bowie and L. H. Miller are directors in addition to the above.

Henderson, Ky.—Three new coal mines are being opened in this (Henderson) county. The Pittsburg Mining Co. is opening a shaft a mile east of Baskett to produce 1100 tons a day by the first of the year. Harry Jennings and associates are installing hoisting machinery in a 76-ft. shaft two miles east of Baskett, where a vein 4 ft. 2 in. thick has been opened. Hayes & Co. are opening the third mine and will have it producing by the first of the year. The three developments will add 1500 tons a day to the county's output.

Industrial News

Madison, Wis.—The Wisconsin Railroad Commission recently authorized an advance of freight rates for one year on coal, the average being about 8c. a ton.

Jefferson City, Mo.—The Missouri Public Service Commission has issued a request to coal operators and jobbers to eliminate the reconsignment of coal in cars.

Pittsburgh, Penn.—The Asbestos Protected Metal Co. announces that it is now represented in the State of Georgia by J. F. Schofield's Sons Co., located at Macon.

Grafton, W. Va.—The regular monthly meeting of the Grafton (W. Va.) Coal Operators' Association has been changed from the third Thursday to the first Thursday in each month.

Winchester, Ky.—The Louisville & Nashville Railroad Co. has announced a reduction of 10c. on the ton of rates on coal from mines to central Kentucky points. The decrease is effective Jan. 1.

Lexington, Ky.—The Retail Coal Dealers' Association, of Lexington, organized at the recommendation of Fuel Administration officials, has established a rule that all retail coal sales shall hereafter be on a cash basis.

Nashville, Tenn.—All trains of the Tennessee Central operating on the western division of the road will be equipped with wood-burning apparatus, according to announcement of H. W. Stanley, receiver of the company.

Baltimore, Md.—A. W. Calloway, president of the Davis Coal and Coke Co., Continental Building, announces the appointment of Karl L. Grebenstein as purchasing agent for the company, with headquarters at Cumberland, Md.

Louisville, Ky.—In conformity with instructions from Washington, Kentucky Fuel Administrator Wiley B. Bryan, on Nov. 30, advised Kentucky operators to give preference to loading domestic coal. The purpose is to relieve the coal shortage in Kentucky.

Norton, Va.—The Virginia Coal Sales Co., H. P. May, manager, has moved its offices to the new Bandy & Hamilton Building, opposite the Federal Building. This company is shipping from 40 to 60 cars of steam coal and about 25 cars of coke per day.

St. Louis, Mo.—W. J. Jenkins, president of the Union Fuel Co., has announced the appointment of C. W. Swingley, formerly of the Consolidated Coal Co., as general manager of the Union Fuel Co., vice H. W. Salmon, Jr., who has resigned to engage in the jobbing business.

Columbus, Ohio.—Mayor Karb is out with a request that all residents of the city economize in the use of water in order to conserve coal. The city water pumping station uses about 10,500 tons of coal yearly, and it is the desire to cut this amount by 1000 tons at least.

Washington, D. C.—The Lehigh Valley Transportation Co. and the Ontario & Western R.R. have asked the Interstate Commerce Commission for authority to increase water rates on anthracite to New England by varying amounts, ranging from 25 to 50c. per gross ton.

Cincinnati, Ohio.—The Chesapeake & Ohio Coal and Coke Co., of West Virginia, has removed to the Federal Courts the suit brought against it by the Reliance Coal and Coke Co., of Cincinnati, alleging failure to comply with a contract to furnish coal, and asking damages of \$35,228.59.

Rochester, N. Y.—The Mechanic Institute has opened a new five weeks' course for the instruction of engineers and firemen in the conservation of coal without curtailing production. The attendance at the opening session was phenomenal, nearly every industry in the city being represented.

Columbus, Ohio.—Coal mine owners in Ohio have been informed of the appointment of Jasper S. Kinslow, as inspector to enforce the new Federal law requiring the licensing of all users of high explosives. The co-operation of state, county and municipal police officials is asked by the Federal authorities to help enforce the law.

Cresson, Penn.—Soft-coal shipments on the Pennsylvania R.R. are breaking all previous records. The daily record of cars handled out of these yards has varied from 2100 to 2900. Every effort is being made to relieve the coal shortage at industrial plants in the east. The scarcity of cars is showing a decrease as stored equipment is being released on an average of 100 cars daily.

Baltimore, Md.—The C. D. Pruden Co., manufacturer of "Prudential" portable galvanized steel buildings, Underwriter's hollow metal windows, Kalamein doors and windows, with main office and factory at Baltimore, Md., opened on Dec. 1, 1917, a general sales office for its products at rooms 806-807 Wallace Building, 56-58 Pine St., New York City. The office will be in charge of Leigh Pruden, vice-president of the company.

Herrin, Ill.—A recent Government order prohibits the shipping of coal into a mining town from the mine in its vicinity. Consequently, all the mining towns in the southern Illinois field have got to haul their coal from the mine on the edge of the town. It is claimed that an unnecessary number of cars were being tied up, while communities far from the mining fields were in need of the coal that could be shipped in this equipment.

Reading, Penn.—G. Howard Bright, fuel administrator here, has named the following committee to assist him in his work: H. A. Acker, to have charge of the domestic fuel trade; Robert E. Brooke, Birdsboro; M. R. Strunk, Boyertown; John I. Sallade, Womelsdorf; Robert S. Loose, Hamburg. Mr. Bright will give his personal attention to the bituminous trade. The coal situation is serious but by no means hopeless in Reading, according to Mr. Bright.

Birmingham, Ala.—The wagon miners of Jefferson County claim that under the ruling of Mr. Garfield, the Government does not make any allowance for hauling charges from mines to railroads; they contend, also, that the output could be greatly increased if a proper allowance were made for this item. A delegation will appear before the next meeting of the Jefferson County Fuel

Administration Board and ask that definite action be taken to regulate hauling charges.

Columbus, Ohio.—Secretary B. F. Nigh, of the Michigan-Ohio-Indiana Coal Association, is sending out blanks to all of the members of the association asking information on slow shipments of coal cars. The blanks ask for the car number, date of shipment, shipping point, kind of coal, shipper, consignee, destination, route and other information. It is planned to have this information ready in case there are charges that shippers and receivers held up cars unreasonably.

York, Penn.—Robert E. Gephart, fuel administrator of York County, has selected these business men to coöperate with him: Gordon E. Campbell, president and general manager of the York Railways Co.; E. W. Gardner, purchasing agent of the York Manufacturing Co.; Max Grumbacher, proprietor of the Bon-Ton Department Store, this city; R. P. Hilton, treasurer and manager of the Susquehanna Casting Co., Wrightsville, and Paul Winebrenner, a banker and manufacturer of Hanover.

Harrisburg, Penn.—Another new record for coal consumption between Altoona and Harrisburg was hung up on Nov. 27. In making the run with an all-steel passenger train, 180 shovelfuls of coal were used. This record was made with a number of officials and special-duty men looking on, and will be used in the campaign by the Pennsylvania R.R. for the conservation of coal. The total number of pounds of coal used was 3060. This trip usually required 371 shovels of coal, averaging 17 lb. each.

Toledo, Ohio.—Loadings at the Toledo docks of various railroads during the week ending Nov. 30 were quite active, when the congested condition of the railroads is taken into consideration. The Hocking Valley docks loaded 122,000 tons during the week as compared with 129,000 tons the previous week. The total loaded by these docks since the opening of navigation is 4,651,861 tons. The Toledo & Ohio Central docks handled 64,000 tons as compared with 61,000 tons the previous week. The total handled since the opening of navigation is 2,291,761 tons.

Columbus, Ohio.—E. D. Leach, assistant State Fuel Administrator, gave out the statement on Monday of last week that when the proposed Government coal pool in Ohio is put in operation those plants which have wasteful burning facilities and refuse to make repairs as directed will be limited in the amount of fuel they can get. A number of instances of flagrant wastefulness is cited. The Administration's combustion engineer found one water-works plant that was burning about twice the amount of coal it should because of equipment that needed overhauling.

St. Louis, Mo.—The Polar Wave Fuel Co. is spending \$100,000 to equip itself for taking advantage of the municipal free bridge. A coal-storage station is being constructed at the east end of the bridge and a fleet of 15 motor trucks is to be used for hauling it across the river and distributing it in the downtown district. The East St. Louis station will be equipped with overhead hoppers, into which the coal will be dumped direct from the cars. The motor trucks will drive under the hoppers and be loaded by the dumping process. Delivery will be made direct to such plants as are equipped to receive coal by dump-loading.

Cincinnati, Ohio.—At a meeting of coal operators and transportation officials, held at the Hotel Sinton, to discuss the proposed pooling arrangement with reference to Cincinnati, it was decided that in view of the peculiarity of the city, especially with reference to the fact that all coal-carrying lines must cross the Ohio River to enter the city, pooling would be of no advantage. The receipt of a considerable amount of coal by river was also a factor which would not be helped or otherwise favorably affected by pooling, the object of which is to eliminate unnecessary switching and otherwise to facilitate the movement of coal.

Philadelphia, Penn.—Coal-wagon drivers must go on the "water wagon" during working hours. The Government has put them there, and they must stay there from 6 a.m. to 6 p.m. Any saloonkeeper who sells a coal-wagon driver liquor of any description between these hours will clash with an order put out on Nov. 28 by F. A. Lewis, Philadelphia coal controller, whose power is backed by all the machinery of the Government. The order grew out of the increasing acquaintance exhibited by drivers for the suds. Numerous complaints coming to the headquarters of the city coal committee had it that too many drivers were arriving at consumers' homes loaded with more than coal.

Youngstown, Ohio.—The fuel situation in the Mahoning Valley has reached a serious stage, in view of the inability of the several large steel and iron plants to operate without an immediate increase in the supply, and assurance of regular receipts hereafter. Several plants have already been compelled to curtail their operations on account of lack of fuel, and Government work will suffer seriously unless the situation receives prompt relief. Washington authorities have been urgently requested to take some steps, if possible, to see that the furnaces are supplied with the fuel essential to their operation, in order to prevent interruption to the supplies of steel vital to the nation's war work.

Norristown, Penn.—The coal shortage is seriously affecting the Conshohocken Iron and Steel mills. While the mills are rushed with orders, it is impossible to work at full capacity owing to the scarcity of coal. This week the Schuylkill Iron Works began cutting down its shifts. At the steel plant the reserve coal supply is being used and the mills are operating but five days a week. The coal shipments received are wholly insufficient for the needs of the mills and the reserve piles will soon be consumed unless more comes quickly. At the steel plant three openhearth furnaces have been equipped with oil burners and other furnaces are being similarly equipped as fast as the work can be carried on.

Scranton, Penn.—The recent repair work on Luzerne St. cost in the neighborhood of \$1000, all of which was borne by the Delaware, Lackawanna & Western Coal Co., following an agreement entered into with the company by the city. The city has received from the same company \$1200, the sum expended on repair work to sewers in South Scranton which were wrecked by a mine cave. For a long while the city has been made to feel the burden of repairing streets damaged by mine caves. Lately, however, through various conferences, the coal companies operating within the city limits have seen fit to inform the city that they will repair whatever damage is done to the streets by surface subsidence.

Jefferson City, Mo.—Fuel Administrator Crossley is completing a workable plan for fixing the retail price of coal all over the state, in place of the cumbersome plan announced by Dr. Garfield. A separate schedule is to be made for every village, town and city. With the mine and freight cost as the basis, a fixed charge for delivery and the retailer's profit, county fuel committees are gathering data on freight rates. When the data are compiled, each local dealer will be required to place conspicuously in his office rate cards showing where he purchases his coal and at what price, the freight rate and the margin allowed for delivery and profit. It was found impossible to put Dr. Garfield's plan, based on the 1915 profits, into operation, because of the imperfect bookkeeping of many of the retailers.

St. Louis, Mo.—The cost of maintaining a coal-delivery team is \$10.522 a day, according to an estimating committee of the Coal Haulers' Service Exchange. The items are as follows: Feed, \$1.82; shoeing, 40c.; upkeep of wagon, 50c.; bedding for team, 3c.; harness repairs, 10c.; liability insurance, 5c.; veterinary attendance, 8c.; wagon license, 0.0166c.; water for drinking and washing, 2c.; horse depreciation, figuring the value of each horse at \$200 and the average life of service at 5 years, 27c.; stablemen, 35c.; tools, 5c.; superintendent, 53c.; stable rent, 30c.; fire insurance, 4c.; personal tax, 0.48c.; interest on investment at 6 per cent., 0.1944c.; 20 per cent. extra equipment, 0.7005c. This makes a total of \$5.4995, but it is estimated that 30 per cent. loss of time brings it up to \$7.856, and the driver's wage of \$2.666 brings the total to \$10.522.

Wheeling, W. Va.—At a meeting attended by Chamber of Commerce representatives and coal men from a number of Ohio River cities, including, besides Wheeling, Cincinnati, Parkersburg and Charleston, plans were defined for the organization of a corporation to build and operate river steamers and otherwise facilitate a revival of river traffic, for the purpose of relieving pressure on the railroads. The Wheeling company is to be capitalized at \$500,000, one-fourth of which was subscribed at the meeting. Other cities will be permitted to subscribe to the stock in various proportions. The committee in charge of the plan is headed by Johnson C. McKinley, a coal operator. A similar company is to be formed at Huntington, W. Va., to operate a boat line between Huntington and Cincinnati, the Wheeling company, it is understood, being intended to operate chiefly on the upper Ohio, between Pittsburgh and Wheeling.

Market Department

GENERAL REVIEW

Demand still exceeds supply. Advance allowed to anthracite producers immediately affects retail prices. Transportation the biggest problem of the industry.

Anthracite—The production of anthracite during the past week was as heavy as could be logically expected under the circumstances. For the first time in the history of the industry the operators were able to induce their employees to work on Thanksgiving day. It was, of course, impossible to induce all employees to work, but a sufficient number answered the call of their country to enable many collieries throughout the region to operate to almost full capacity. This is in many respects a pointed answer to those who have recently, in certain publications of the country, taken the opportunity of maligning the coal industry on the ground of a lack of patriotism. An advance of 35c. per ton on the domestic sizes of anthracite was recently granted by the Coal Administration. This advance was to cover certain increases in wages made to the mine workers. It of course immediately affected the retail prices of this fuel throughout the country. While conditions in the anthracite trade are still unsatisfactory and to a considerable degree strained, yet the stress is perhaps not quite as great this week as it has been during some weeks in the past. If the United States Congress acts upon the recommendation of the President contained in his recent address to that body and declares war upon Austria-Hungary, with the internment on unnaturalized citizens of that monarchy, it may to a decided degree adversely affect the production of anthracite. Anthracite mine workers are to a large extent foreign born and it has been estimated that nearly one-quarter of their number owe or have owed allegiance to Austria-Hungary.

Bituminous—Transportation still remains the big problem confronting the fuel industry of the land. During the past week the supply of cars to the mines throughout the bituminous regions has, almost without exception, been well below requirements. The working of one to four days per week throughout the mining regions is neither conducive to a large output of coal nor to happiness and contentment among the miners. In the Pittsburgh region several blast furnaces have been obliged to shut down in addition to those already out of operation on account of lack of fuel. With the closing of Lake navigation and the coming of winter, it is anticipated that a considerable number of locomotives and cars which have been used for the transportation of iron ore in the Northwest may be transferred to the coal regions to help out a lack of motive power and rolling stock there. It is estimated that something like 450 locomotives might be transferred from the Lake Superior region for this purpose during the coming winter. While this would hardly be an adequate supply to relieve the present scarcity of motive power, it will doubtless help to a considerable degree. The pooling of the coal of the Pittsburgh and West Virginia regions and the avoidance of cross-movements of coal will also do much to relieve the situation.

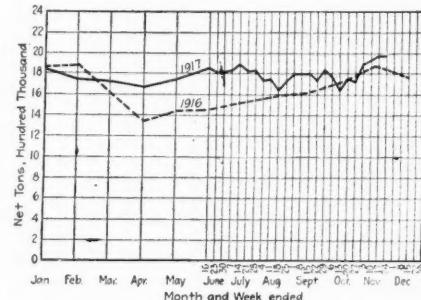
Lake Trade—The shipment of coal over the Great Lakes is drawing to a close. Freight rates by this route are also increasing.

A Year Ago—Anthracite slows down due to the mild weather. Reactionary tendencies in bituminous, though no important recessions. Closing of Lake trade causes no increase in supplies. Better car supply in the Middle West.

COAL PRODUCTION

A slight decrease marked the production of bituminous coal during the week ended Nov. 24. The total production of soft coal (including lignite and coal made into coke) is estimated at 11,260,490 net tons, an average per working day of 1,876,748 tons. This was 0.6 per cent. less than the output during the preceding week. It is encouraging to note, however, that the week's production exceeded that of the week ending Nov. 10 by 1.4 per cent. The bituminous production thus remains higher than at any time since early July.

The total production of beehive coke is estimated at 656,093 net tons, an average per working day of 109,349 tons. Anthracite



coke shipments amounted to 42,936 cars, the highest mark attained since the week of September 1.

CARLOADS OF COAL AND COKE ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS WEEK ENDED:

District	Nov. 3	Nov. 10	Nov. 17	Nov. 24
Bituminous shipments, 114 roads.	192,419	199,205	201,787*	199,481†
Anthracite shipments, 9 roads.	31,314	40,459	42,024*	42,936†
Beehive coke shipments, 4 roads....	12,234	11,799	12,784*	13,469†

* Revised from last report. † Subject to revision.

BUSINESS OPINIONS

The Iron Age—Pig-iron statistics for November show an unexpected though very slight increase in the daily rate. For the 30 days the total was 3,205,794 tons, or 106,859 tons a day, against 3,303,038 tons in October, or 106,550 tons a day. So much had been made of the banking down of furnaces at Youngstown last month, due to coke shortage, that a serious falling off was looked for. But other districts made up the loss which turned out to be only about 10 per cent. from the Youngstown output of October.

Bradstreets—Scarcity, actual or impending, is still the most commonly met with word in the trade reports, and car, labor, coal, food and raw material supplies present many problems as the winter season opens. This, too, despite a perceptible slowing down in what are termed nonessential lines and price levels unequalled for generations. Basic trade conditions are not greatly changed; but Government purchases are on an enormous scale, and civilian wants are still subordinated to national necessities.

The Dry Goods Economist—Thanksgiving week, always considered as the real beginning of the holiday-selling season, opened with clear skies and lower temperature. As a consequence, retail stores in many centers were well filled and business—especially in stores whose customers are largely wage earners—was particularly good. A noticeable feature of the selling is the apparent preference for useful articles for gift purposes.

American Wool and Cotton Reporter—Transactions in the Boston wool market have not aggregated large volume during the week under review. The market although quiet has remained strong. Still more advanced quotations are predicted for cotton than have been reached yet. Mills have been calling some cotton and there has been little desire to sell. While present conditions remain so favorable to the holder of cotton no reason for declines is seen.

Marshall Field & Co.—The current wholesale distribution of dry goods for the week is ahead of the heavy volume of the same period a year ago. The total volume of road sales for both immediate and future deliveries has been in excess of the corresponding week in 1916. Merchants have been in the market in about the same numbers. The market on domestic cotton continues strong. Collections are excellent.

Atlantic Seaboard

BOSTON

Plenty of coal statements, but no improvement in receipts. Situation much muddled. No apparent developments on all-rail priority for New England. Tide-water loading congestion worse than ever, especially at Hampton Roads. Request for more tugs shows better understanding of New England situation. Suspension of Northwest priority order may help, but outlook discouraging. Anthracite receipts light.

Bituminous—Current developments are extremely hard to follow. Many "statements" are issued that are conflicting, so far as practical effect is concerned, but out of the maze it is apparent that the fuel authorities are gradually coming to the belief that this territory, or such of it as is accessible to Tidewater, should be served by coastwise shipments. A shift at this time is much more complicated, however, than formerly, because the great bulk of steam-coal receipts in this market in normal times has come from Hampton Roads, and the loading facilities there are more and more being occupied with the heavily increasing requirements of the Government.

If there is to be any speeding up of bituminous for delivery in this direction manifestly it must come via Baltimore, Philadelphia and New York. The supply of bottoms available for Hampton Roads loading can only be increased by better loading dispatch, while at Philadelphia and New York there is quite an amount of barge tonnage which does not go south of the Delaware and yet is in excess of demand because there is not the coal to load. With railroads over-burdened, and barges lying idle, it almost seems as if some better co-ordination could be effected.

To say the present situation is muddled is putting it mildly. There was general expectation that some kind of real relief would be ordered for this section when priority for the Northwest was suspended. It transpires now, however, that other commodities besides coal are in line for priority, and about the only advice New England gets is to buy wood.

The pooling arrangement is reported to be working poorly at Hampton Roads. The difficulty appears to be that coal is often not on hand at the piers for dumping, and the confusion is the subject of bitter complaint. It is not easy to see, under such circumstances, how the movement to New England can be much accelerated from Hampton Roads.

The announcement of the operating committee of the Railroad War Board that more sea-going tugs would be asked for to move boats to New England gives a little encouragement to the trade, for it shows a better understanding of the difficulties. "The Navy Department has commandeered 25 per cent. of the sea-going tugs owned by the Reading Railway," says the committee statement, "which has caused congestion on rail lines due to the inability to move coal through all-rail routes." This is what men in the coal trade tried to make plain to the authorities many months ago, but now that there is like congestion at the southern loading piers the situation will be extremely hard to remedy unless something really comprehensive is done.

Along with other large consumers the railroads are running on relatively small margins of fuel. On Nov. 26 Washington ordered all mines supplying the New Haven and the Central New England to give preference to the contract requirements of these railroads over all other shipments except where coal is diverted by direct requisition of the Fuel Administration. Other imperative needs are being dealt with in various classifications of "essential industry."

In spite of all the unfavorable signs there are still those who hope that the close of Lake navigation will mean better shipments all-rail. At this writing, no improvement is noticeable, and consumers are at a loss which way to turn.

Small lots continue to be sold inland from rehandling plants at Providence, Boston, and Portland, but every inquiry is scrutinized and the applicant made to show

an emergency need for fuel. Prices for such supplies vary from time to time according to steamer demurrage and other variable elements in the cost. At Providence around \$7.75 has been quoted per gross ton while at Boston sales are made at \$8.25 per net ton or \$9.24 gross. Such rehandling plants are those that are now classified as retailers. Factors who do not physically handle coal over a wharf of their own are obliged to conform to the rulings of the Fuel Administration with regard to price.

All-rail deliveries show a marked slowing up and all kinds of industries are likely soon to be seriously embarrassed. In many places the smaller plants are borrowing from those who are more fortunate, but such accommodation cannot last.

Anthracite—The 35c. advance granted by the President's order, effective Dec. 1, is about the only news in this territory on domestic coal. It is another item to be considered by local fuel committees in passing upon retail prices, which now must certainly be advanced in cities like Boston, where \$9.50 is still the ruling price. Salem, Mass., retailers were authorized this week to charge on the basis of \$9.75 per net ton, sidewalk delivery.

No decision is as yet reported on rates in company-owned anthracite-carrying barges from New York to Boston and other New England ports. Some of these barges have been bringing coal at \$1 from New York, while others were on a \$1.75 rate. One dollar and twenty-five cents remains the Reading rate on anthracite from Philadelphia.

Several Boston retailers have yards bare of domestic sizes, and the same is true of many other localities. New Bedford, Mass., is one of the cities where local supply is almost nil, and there are ports along the coast of Maine where there is no coal. The Fuel Administration is trying to cope with these situations as they arise, but so many towns are so far in arrears that not much in the aggregate can be accomplished. The effort is being made, as in bituminous, to take from the few dealers who have a surplus and give to those in distress.

NEW YORK

Larger shipments make no impression on the market and coal is still scarce. Bituminous conditions still bad and, although little is heard of plants closing for lack of fuel, many are extremely short of coal.

If larger shipments have been received here they have made no impression in the demand, which to all appearances continues as heavy as at any time during the past few months. Dealers are as short of coal as they can be, while the retailers are as swamped with orders and with as little coal in their yards as at any time in the history of the trade excepting at strike periods.

The granting of increases in wages to the mine workers and the permission given to the operators to add 35c. per ton to the price list fixed by President Wilson on Aug. 23, and adjusted as to pea coal on Oct. 1, may or may not affect conditions. It is known that the mines are being operated as near full time as possible, but as labor is short and the workers are said to be going into other industries where the pay is higher and the work more congenial, it is thought that with the increased pay those now at work in the mines might be induced to remain.

Representatives of some of the companies here are loud in their praise of those miners who broke all traditions by going to their work on Thanksgiving Day. They said that the mine workers have demonstrated their willingness to do their bit in stimulating production and relieving the fuel situation.

The request of Dr. Garfield that the operators during the next 30 days give preference to industries essential to the country's war program, "domestic requirements" and "public utilities" ought to have some bearing on the situation. Coal is badly needed and unless something is done to comply with the requests of the local dealers for a bigger supply, there is likely to be considerable suffering when cold weather sets in.

Coal for the peddlers which is now in the hands of a committee, is said to be more evenly divided and the poorer residents are said to find it easier to get fuel. However, there are dealers in the poorer sections of Manhattan who claim to have no coal in their yards.

Retail dealers are swarming the wholesale offices but fail to find supplies. In some sections of the greater city civic organizations have undertaken to furnish coal for the residents of the neighborhood, while in other sections the fuel administrators are being appealed to with considerable success.

Some dealers believe the situation so far as it relates to the domestic coals will improve within the next few weeks, but they do not expect much change in steam coal conditions which are serious.

Quotations for buckwheat No. 1, rice and barley do not vary greatly from last week but these do not indicate the true state of the market as there is practically no buckwheat or rice to be picked up while the supply of barley is short.

President Wilson's order increasing the mine prices for the domestic coals was put into effect by the producers on Monday and Tuesday following a meeting of operators held in this city on Monday. On the previous day some of the sellers of individual coal were said to be quoting the new prices, but it was not until after the announcement of the operators that they had put into effect the increase and had also accepted the terms fixed by Dr. Garfield, the fuel administrator, in connection with the increased wage scale did the advanced price become general.

The retail dealers in most cases increased their prices, which now range from \$8.75 to \$9 for egg, stove and chestnut.

With the declaration of war on Austria-Hungary as recommended by President Wilson in his address to Congress on Tuesday the operators may have to meet a further labor shortage, as many Hungarians are employed in and around the mines, some of whom may not be naturalized.

Current quotations, per gross ton, f.o.b., Tidewater, at the lower ports are as follows:

	Circular	Individual
Broken	\$6.30	\$7.05
Egg	6.20	6.95
Stove	6.45	7.20
Chestnut	6.55	7.30
Pea	5.05	5.80
Buck	3.95@ 4.65	5.50@ 6.00
Rice	3.40@ 3.60	4.50@ 4.75
Barley	2.90@ 3.15	3.00@ 3.20
Boiler	3.15@ 3.40

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—Conditions could hardly be worse. Sales of spot coal are seldom heard of and operators are hardly able to give full contract requirements.

There has not been any noticeable improvement in car supply notwithstanding the cancellation of the Lake priority order which it was expected would improve conditions. The success or failure of the fuel administrators' efforts to relieve the situation in New England cannot yet be judged but there are numerous buyers constantly on the ground here urging shipments. The work of relief is expected to be helped by the request of Dr. Garfield to operators urging preference to shipments for the next 30 days.

The efforts of the National Fuel Administration to conserve fuel by a reduction of schedules on surface and elevated lines and by a reduction in the use of electricity for heating purposes, have been met by the Public Service Commission of this district, with a statement that as New York City is spending, in conjunction with private traction companies, \$350,000,000 a year to relieve congested transit conditions, the situation is such as to require additional facilities rather than a reduction in the use of present facilities.

While not much is heard of plants being closed down because of the lack of fuel, several are on the verge of being without coal. Middlemen here are anxiously awaiting an order giving this market the preference in shipments. So far as buyers are concerned some are applying directly to the Fuel Administrators for coal saying they must obtain it for immediate use.

Smithing coal is being quoted here at from \$4 to \$4.50 per ton.

PHILADELPHIA

Anthracite circular price increase. Ruling on contracts real surprise. Coal consumers almost in a panic despite heavier shipments. Government coal needs cause confusion. Increased wages for wagon drivers. Bituminous car supply unimproved. Railroads making strong efforts. Request to continue Lake shipments. Many contracts expire Jan. 1.

Anthracite—The new price order handed down by the President, increasing the price of coal 35c. at the mines, was the outstanding feature of the market this week. There seemed to be a general impression that an increase would be granted and most interests felt that the full amount asked—45c. per ton—would be allowed.

An interesting feature of the latest order is the prohibition against raising the price of coal furnished on contracts which contain a clause providing against this contingency. This applies mostly to steam sizes, as it is rare for the companies to make contracts on prepared sizes. It can be said that such an edict was entirely unexpected among the operators and has caused considerable comment. Most of the larger companies are heavily contracted on steam sizes, although some of the individual operators have less than usual under contract and it looks as though these concerns will take advantage of the situation by making an advance on the steam grades.

As the Government heretofore has attempted the regulation of prices on steam coal this latest ruling on contracts brings at least partial regulation and it would not be at all surprising that a further order will be issued fixing a limit on all steam grades sold on a spot basis, as many of the contracts now in effect will expire on Apr. 1. Another interesting phase of the order is the statement that the Fuel Administration will order a reduction on Apr. 1, in conformity with the usual practice of the operating companies. This has already caused much speculation as to the amount of the reduction—whether it will be the usual 50c.; certainly it will not be less and it may even be more.

Unquestionably too much publicity has been given to the coal scarcity just at a time when unusual efforts were being made, both by the shippers and the railroads, to relieve conditions. Heavier shipments than for some time have been made, but just as they were arriving the demand became so excessive it was impossible in all cases to place the coal where it would do the most good. This was further accentuated by the arrival of freezing weather, with some little snow.

The Coal Committee has also had similar experiences. The chairman had agreed that to all who called with a physician's certificate stating there was sickness in a home and no coal a red card would be issued directing the nearest dealer to deliver a ton of coal. Either there was an unusual amount of sickness or there are a lot of unscrupulous doctors, because the offices of the committee were besieged with people holding certificates. The police had to be called to clear the place and the system of relief collapsed on account of the medical men failing to grasp the importance of using care in issuing certificates. A modification has been instituted whereby physicians must call in person and certify to their own knowledge that there is no coal in the home of their patient. This stopped the rush and the first day about 15 red cards were issued in this manner.

On the whole the situation, while serious, is much exaggerated because of newspaper exploitation of the shortage and as a consequence people with even a fair supply of coal are fearful for the cold months to come. A few more weeks' shipment like the past two will go a long way toward relieving the strain. We are firmly convinced if the public could be made to realize the true situation and the efforts being made in moving coal here, that the wild ordering of the past few weeks would immediately stop.

Much of the present condition is due to lack of system in the placing of Government orders for coal, which are always given with instructions for immediate shipment. The Pennsylvania R.R. recently had several hundred loaded cars on hand in the city for the Government and in addition over 2245 cars of coal had to be dumped on the ground owing to the lack of vessels to load. Efforts will be made to have the Government modify its manner of ordering, so that shipments can be spread out over a longer time.

The dealers are much pleased with the plan of the fuel committee to promote efficiency among their wagon drivers. The drivers apparently have too much money to spend for liquor and often abandon their teams or have to be relieved on the street.

At the request of Doctor Garfield, unusual efforts were made by the officials of all mining companies to have their mines work on Thanksgiving Day. As a consequence a large tonnage was turned out that day for the first time in the history of the region. The outlook for December is encouraging owing to the cancellation of the priority order in favor of the Northwest, also the issuing of an order giving preference to the movement of coal and coke cars, both empty and loaded, to and from the mines.

Dealers continue to call for any size or kind of coal and their December requisitions almost invariably read "Any quantity, size and kind." They are an unhappy lot these days, with yards empty half the time, while overhead charges continue with

a constant cry of higher wages from their help. In the Kensington and Port Richmond districts the retail men have agreed with the drivers by allowing them an advance of \$3 a week, and the movement has now spread all over the city.

Of the steam sizes the strong feature of the week was the greatly increased demand for culm, with a corresponding increase in price. Culm that a week ago brought from 50c. to 55c. is now averaging \$1 to \$1.25 at the mines, and we have heard of a few sales at \$1.50. Buckwheat, rice and barley are being held down close to the figures reported last week—\$4, \$3 and \$2 respectively. A peculiar condition of the steam trade seems to be that one of the large companies has a quite fair tonnage of barley which it has for sale for spot shipment.

The prices per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide are as follows:

	Line Tide	Line Tide
Broken	\$5.90	\$6.05
Egg	4.80	6.00
Stove	5.05	6.35
Nut	5.15	6.40
Pea	3.75	4.65
Buckwheat	\$2.80	\$3.40
Rice	2.30	3.30
Boiler	2.10	3.20
Barley	1.80	2.05

Bituminous—Despite all efforts, the car supply continues to retard production. The railroad companies are known to be making strong efforts to improve conditions, but it cannot be said that the car allotment this week has been in excess of 40 per cent. in the most favored instances, and on an average has really been nearer 25 per cent. while some operations report an even lower proportion. This matter of car supply far overshadows that of price in the minds of the operators, and while they continue to insist that a more favorable price must be granted them, yet the major portion of their efforts are directed toward getting sufficient cars to allow their mines to reach the maximum of production.

There is some intimation that shipments to the Northwest via Lake ports may be continued as long as the Lakes remain free of ice. It is understood that the shippers have requested the authorities to permit a continuance of shipments, and in the event that this is acceded to the local market cannot expect the usual relief caused by the cessation of Lake traffic at this time of year.

All operations continue to make heavy shipments on Government requisitions and by the time these and railroad fuel orders are covered there is only a fair amount of coal left for contract orders. This matter of contracts continues to excite much interest as the first of the year comes nearer. With many contracts expiring at that time the question continues to be asked whether this will have the effect of throwing any considerable quantity of free coal on the market at the \$2.45 price.

The offices of the selling agents continue to be besieged with buyers anxious as to their fuel stocks; in addition inquiries by mail and phone show no let-up. The usual stereotyped reply is, We can't get cars; do your part to have this condition improved.

BALTIMORE

Coal supply stringency eases up a bit under Government priority rights. Hard and soft coal men name committees to cooperate with fuel administrator.

Bituminous—Under preferential shipment release orders for this and other Eastern points several hundred laden fuel cars were released for delivery on both the B. & O. and Pennsylvania. Coal had piled up on many sidings and at points like Brunswick there were a thousand or more cars. A part of this was gotten under way during the week, and the situation here was somewhat relieved, although much more soft coal could be absorbed.

With the coal men all pulling together under the direction of the fuel administrator and his Baltimore committee recently appointed, it is hoped to not only keep everybody supplied with enough coal to keep plants running full but to prevent any storing by those who do not need the coal at once. The trade is also pleased with the prospect that the piers here will again be put in more active use through the plan of the Government to transfer Great Lake colliers to the Atlantic coastwise trade for the winter. The plan is for the colliers to carry the coal needed from this port and Hampton Roads.

Anthracite—The hard coal situation is also being gradually bettered. Not only was there a more liberal delivery during the week, which enabled quite a number with no coal in their bins to get at least a partial supply, but the trade showed an encouraging spirit of cooperation with the fuel administration to meet all emergencies.

All complaints to the fuel administrator of inability to get coal were promptly investigated and cared for by the retail hard-coal men. A committee has been named to prepare recommendations, and among other things an application system and inquiry plan for consumers will probably be arranged. For the present there is no danger of any schools or public utilities here being closed for lack of coal, and if the slight betterment in shipment of coal continues a judicious management will enable the situation to be met without unusual suffering.

Lake Markets

PITTSBURGH

Further consideration of coal-pooling proposition. Work on eliminating cross movements. Railroad pool being operated. Scarcely any market offerings.

The Pittsburgh Coal Operators' Association has appointed a committee to draw up plans for pooling the district's coal production in case such pooling is determined to be advisable. The committee is addressing itself first to the division of the output into grades, each grade to have combined with it the proper producers and the consumers who have been receiving such coal. It was the difference in grade that was regarded at the recent general meeting as being the chief difficulty in any pooling arrangement.

Last Saturday a general meeting was held between railroad officials and coal operators to discuss the elimination of cross movements of coal, and some committee meetings have since been held. Thus far 40 or 50 cases of cross movements have been definitely developed, and the elimination of even these would represent an important reduction of the burden upon the railroads. Such cases, of course, frequently go beyond the Pittsburgh district, there being a number of cases of Fairmont coal traveling past the Pittsburgh district, with a corresponding movement of Pittsburgh district coal to points that could be at least equally well served from the Fairmont district.

The General Operating Committee of the Eastern railroads, the railroad pool established by direction of the War Industries Board Saturday, Nov. 24, has issued a number of important orders to the railroads, directed chiefly toward relieving the traffic congestion in the Pittsburgh district. One of the orders prohibits the furnishing of anything but stock or box cars for wagon loading of coal. No definite improvement is yet to be noticed as a result of these orders. There was an attempt at a cleanup over Sunday, with the result that considerable quantities of coal that were tied up en route have been reaching consumers this week. Car supplies are not materially improved.

There is scarcely any free coal being offered, the limited production being taken up in filling old contracts or in meeting priority orders, of which there is now quite a large number. We quote the market at the set prices: Slack, \$2.20; mine-run, \$2.45; screened, \$2.70, per net ton at mine, Pittsburgh district, with 15c. permitted to be added in sales made by jobbers.

BUFFALO

Market more quiet, but not making much progress. Big demand now for anthracite. Lakes less active. Cold weather retards shipments.

Bituminous—The city jobbers are getting more coal at Government price, but they do not see any early solution of the vexed problem. All they see is that the consumption is heavier than the output. This is now attributed mostly to car shortage, which the authorities do not seem to have attacked in any determined way. Till the mines get the cars they need it is useless to try regulating the trade by fixing prices. The consumer may be getting his coal at less cost than he was before the prices were fixed, but he would much prefer to see coal plenty than the price low.

It is claimed that quite a good many mine owners are selling their output for a premium on the quiet. Some of the jobbers who are not in such deals and would not have anything to do with them say they are not going to complain of them, no matter how much they are injured thereby, while others mutter and say that some day the authorities will get a bundle of information that will result in somebody getting into trouble. Of all the regulated industries, coal, and especially bituminous, seems to have come out worst so far.

Complaints of shortage come from all directions, but it is hard to find who is

really in need unless an investigation is made. One jobber notes that a customer reported his supply as "dangerously low," but a look at his coal pile showed that he had enough for more than three weeks' running.

The prices of bituminous are more in actual use as the weeks go on, though the bulk of the coal goes on contract still. The consumer with a contract will, of course, take all the coal on it that he can get, so it is hard to say just what the situation is, especially as cannel and smithing are sold at agreed prices and a good many jobbers are opening Canadian offices to get the benefit of higher prices there. Quotations are:

	Slack	Lump
Pittsburgh	\$3.75	\$4.25
Bessemer	3.70	4.20
Allegheny Valley	3.60	4.10

All per net ton, f.o.b. Buffalo.

Anthracite—The local anthracite situation is not much changed. If any house holder is out of coal the fact has not been reported. That some have small supplies is doubtless true, but there are a good many with much more than they need. The fuel administrator claims to be able to take care of all who are likely to run out right away.

A big scare has been staved off by the decision not to follow the recommendation of a special committee of the State Public Service Commission to cut off the 20,000 domestic consumers of natural gas and turn the supply over to factories which were using it. Had the recommendation been carried out a great amount of distress must have resulted, for many of them had not used coal for years and consequently have none.

The Lake trade is as active as the conditions will permit. The weather has been so cold for a week or more that the coal has frozen in the cars and had to be loosened with picks, thus delaying the movement badly and breaking the coal up seriously. On this account the Lake shipments for the week fell off to 70,800 net tons. Freight rates are becoming unsteady and hardly quotable.

Lake shipments for the month were 576,200 tons, as against 399,794 tons for November last season. For the present season they were 3,991,539 tons and 2,667,740 last season.

TORONTO

Conditions much improved. Coal coming forward freely. Yards being replenished. Outlook satisfactory. No fear of winter shortage.

The congestion of shipments at the boundary which latterly held up coal supplies for Toronto, has been relieved and coal is now coming forward freely. Stocks in the yards are being replenished and orders which were held over for some time are being filled as quickly as possible. Alfred Rogers, of the Elias Rogers Co., who was returned to Toronto after conferences with officials in the American coal centers, states that Canadian requirements will be well provided for, and that there is no reason to fear a shortage.

The extent to which coal has already been stored by consumers will necessarily make business during the winter months much lighter than usual. Prices are steady, quotations for best grades per short ton being as follows: Retail anthracite egg, stove, nut and grate, \$8.50 @ 9.50; bituminous steam, \$9; slack, \$8 to \$8.50; domestic lump, \$10; cannel, \$11; wholesale f.o.b. cars at destination, three-quarter lump, \$7 to \$7.50; slack, \$6.85 to \$7.00.

DETROIT

Relief for Detroit is promised by Federal coal administration. Immediate shipment of supply of hard coal is expected. Lake shipments take higher rate.

Bituminous—With supplies on hand rapidly diminishing and only small consignments of coal arriving, wholesalers and jobbers say the situation in Detroit is becoming daily more threatening. While withdrawal of the Federal coal administration's priority regulations regarding Lake coal became effective last week, little change has yet developed in the way of increasing receipts in Detroit. Sufficient time has scarcely elapsed, however.

Meantime demand from steam coal users continues urgent and jobbers say all sorts of influences are being brought to bear on them to obtain delivery of coal which they do not have to sell. In cooperation with the state coal administration the jobbers, in case of dire emergency are diverting coal from contract customers to relieve the emergency. This plan has disadvantages as it causes dissatisfaction on the part of a customer who perhaps needs the coal nearly as much as the emergency case receiving

it. It also imposes a loss on the shipper of the amount of the difference between the price at which the coal was being delivered under contract, and that which applies under Government regulations on sales where no contract exists.

Climatic conditions are still unusually favorable for household consumers, whose supply is short or who are without coal. Demand is steady for domestic sizes and little coal is to be had. Smokeless coal is said to be altogether a missing quantity and yards have little or no lump coal on hand, stocks having been reduced without proportionate replenishment.

Anthracite—Hope for early relief of the anthracite situation now hinges on action promised the state fuel administration by the Federal department. Dr. Garfield is reported to have ordered immediate shipment of a quantity of hard coal to Detroit. Reports of the municipal coal administrator at the end of last week showed 2358 homes in need of coal and with none at hand to supply them. Temporary relief is to be afforded by shipment of about 3000 tons of coke to Detroit under instructions of the Federal administrator.

Lake Trade—With the close of Lake navigation now distant only a few days, depending on ice conditions in the rivers, the carrying charge on coal to the head of the Lakes has advanced 25c. a ton to 75c. and \$1.

COLUMBUS

Demand for all grades of coal continues strong, with the supply rather limited. Raising of the Lake priority order is expected to aid the local situation.

Demand for domestic fuel is now the strongest feature of the Ohio trade. Consumers in every community through their local committees are clamoring for coal. The cold wave of a week ago has been moderated to a certain extent and with the moderation came a falling off in suffering and real emergency cases. But local committees are still busy investigating conditions and giving orders for delivery of a ton of coal here and there to relieve the situation. Dealers are now getting in a larger amount of coal, much of which has been on the way for days and even weeks. Retail stocks, however, are light and many are working from hand to mouth.

The steam trade is also active as many steam plants have insufficient fuel. Power concerns have frequently called upon the fuel administration for relief. Schools and churches are now fairly well supplied and the same is true of hospitals. Public institutions have been able to keep on operating with little surplus fuel on hand. Service concerns have been hard put to it to secure an adequate supply of coal and in some instances operations have been suspended temporarily. Railroads are confiscating quite a large tonnage and this has the effect of lessening the supply for certain steam plants. On the whole the steam situation shows little change from the previous weeks.

Lake trade is still active, although the Lake priority order was lifted Nov. 30. There are still many loaded cars assigned to Lake ports for shipment to the Northwest and it is doubtful if all will reach that destination.

Production in Ohio fields was considerably curtailed during the week by the intervention of a holiday and a short car supply. In the Hocking Valley the output is estimated at 70 per cent., and the same figures are reported from Pomeroy Bend. Eastern Ohio produced not more than 40 per cent. owing to car and labor shortage. Other districts produced a fair average.

Prices on short tons f.o.b. mines are as follows:

	Hock-	Pom-	Eastern
	ing	eroy	Ohio
Rescreened lump	\$2.70	\$3.05	
Inch and a quarter	2.70	3.05	\$2.70
Three-quarter	2.70	3.05	2.70
Nut	2.70	3.05	2.70
Egg	2.70	3.05	
Mine-run	2.45	2.70	2.45
Nut, pea and slack	2.20	2.45	2.20
Coarse slack	2.20	2.45	2.20

CINCINNATI

Increasing congestion of traffic has contributed to the fuel shortage, which continues without substantial relief. Comparatively mild weather has prevented suffering.

An unprecedented congestion of coal, as well as of other traffic, on coal-carrying lines entering this gateway, resulting in inability to move trains in any direction and consequently in limited receipts of coal here, as well as a car shortage at the mines, is a conspicuous feature of the situation just now.

Coal operators are blamed by railway men and publications for lack of patriotism in keeping coal production ahead of a nor-

mal rate, at a time when, according to operators and well-posted traffic men, the railways themselves are demonstrating every day inability to take care of the traffic offered. It is stated that on line there are now more than 11,000 cars in transit, whereas trackage facilities are not designed to take care of more than 7000 cars, at the most, and this condition has resulted in an absolute embargo on all shipments until the congestion is relieved.

As to coal itself, all consumers and dealers are living in a hand-to-mouth manner, supplies received being barely sufficient for minimum current requirements, and many schools, institutions and industries here and in nearby Ohio cities are absolutely without coal. Comparatively mild weather, without any severe cold during the past week, has made the situation endurable, but severe weather would bring about a distressing situation, as well as serious industrial difficulties.

LOUISVILLE

Industrial demand from this market continues far in excess of supply and transportation facilities. Domestic market relieved by mild weather. Prices being rapidly fixed.

Although there is a fairly satisfactory car supply and somewhat of an improvement in labor conditions and labor efficiency in the Kentucky coal fields, the industrial bookings continue far in advance of production and distribution. Generally, industrial buyers are not critical as to the coal they buy and there is little selection going on. Few manufacturing plants, however, are without fuel and most of them are managing to keep stocks slightly ahead of requirements.

In the domestic trade the fuel administration is speedily fixing local retail prices, making close adjustments, against which the dealers are complaining with some bitterness. It is alleged by Kentucky dealers that retailers in other states are receiving more liberal treatment. Another phase of the situation is that the price schedules spell an easier profit on industrial coal and less on domestic coal, a disparity which adds to the discouragement of the retailer who would like to take care of his domestic customers but who can more profitably divert that same coal to industrial buyers.

Operating companies with retail yards under the circumstances find it much preferable to sell their outputs f.o.b. the mines, but they continue their retail branches because they feel morally bound to do so and, further, because they wish to maintain their places in the markets. Retail business is approximating a cash business and the straightened conditions are enabling the retail trade to stamp out various abuses heretofore suffered.

BIRMINGHAM

Domestic situation slightly relieved by warmer weather, though there has been no appreciable accumulation of stocks. Customers limited to one ton. Steam demand strong and appeals persistent from a wide range of territory. Production heavy, but not adequate to requirements. Movement slow.

A few days of more pleasant weather has slightly relieved the tense condition in the domestic market and a few cars have been received by local yards which were without stocks last week. The local fuel administrator has issued instructions to retailers to limit deliveries to one ton to each customer, and predicts a famine in local circles unless the greatest conservatism is used in distribution and consumption.

The demands on this district for steam fuel are heavy and the supply is inadequate to anything like meet the requirements. Production continues at the maximum permitted by the dominating factors of car and labor supply, which is far below mine capacity, but much heavier than ever before in this field. Alabama mines are producing coal on a higher comparative basis than any other field, and if uninterrupted by the machinations of union agitators, operators predict that this record will be maintained, if not improved upon, during the period of the war.

Coke

CONNELLSVILLE

Car supplies continue poor. Complaints of evasion of Government prices. Curtailment in pig-iron production. Hopes of better traffic conditions.

Car supplies in the Connellsburg region in the past two weeks have averaged about 45 per cent. of the ratings, and this week did not open with promise of any better showing, as Monday saw 60 per cent. allotments and Monday should be the best day

of the week. The receipts of coke at furnaces, however, have been materially improved this week, as there was a partial cleaning up at yards and sidings over Sunday.

There continues to be much complaint of operators attempting to evade the Government price regulations, though specific instances are not ordinarily mentioned. One of the alleged abuses is the offering to blast furnaces of coke claimed to be salable at the \$7 price fixed for "72-hour selected foundry coke" because it has been in the ovens 72 hours, although it cannot be shown that it has been selected.

At the beginning of this week the Carnegie Steel Co. was down to operating 41 of its 59 blast furnaces, against 48 stacks a week earlier, the curtailment being due to shortage of coke. Most of the merchant furnaces have lost considerable time, furnaces that have been able to run full being the exception.

There are strong hopes of there being relief in the traffic situation in the near future, chiefly by reason of the pooling of the railroads east of Chicago, decided upon Nov. 24. Apart from diversion of traffic from congested to less congested tracks, and various other measures, it is intended to bring locomotives that can be spared from the West. The Lake Superior ore region is expected to furnish 450 engines.

There are scarcely any market offerings of coke. The market is quotable at the Government prices, \$6 for furnace, \$7 for 72-hour selected foundry and \$7.30 for crushed, over 1-in. size, per net ton at beehive ovens.

The "Courier" reports production in the Connellsburg and lower Connellsburg region in the week ended Nov. 24 at 316,017 tons, an increase of 9777 tons, and shipments at 312,008 tons, an increase of 27,885 tons.

Birmingham—Coke continues in strong demand in the local market, and although production is at the maximum permitted by present conditions, there is only a small tonnage available for spot buyers. Contracts are gradually expiring and the tonnage thus released will be contracted for or sold in the open market on basis of Government prices. The movement of coke, especially out of the district where boxcar equipment is required, is greatly impeded by the car shortage, racks being used to a great extent in making shipments to industrial plants in local territory. Furnace operations is endangered by the scarcity of furnace coke, and the likelihood is that sufficient stocks will not be accumulated to prevent some bankings during the holiday season.

Buffalo—The trade is still confined to contract filling. Jobbers report that the Government prices of \$7 and \$6 at the ovens for the two highest grades, or \$8.85 at Buffalo for foundry and \$7.75 for furnace still hold, but they are not able to get any to sell. No complaint is heard of shortage at the furnaces here, though the general supply is not large.

Middle Western

GENERAL REVIEW

Demand for all grades continues strong, and in many localities, urgent requests are being made for immediate relief.

Regardless of the fact that every producing mine in the Mid-West section has, during the past week, produced all the coal that it was possible to load, with the available supply of equipment, no noticeable effect has been made on the market conditions.

From all sections complaints are reaching local and state fuel administrators of dealers unable to get coal, and their customers without fuel. Complaints of this character are promptly investigated and, if circumstances are found to be as reported, they are promptly relieved. Although many of the grumblings have emanated from dealers who had no coal, at the same time other dealers in the same towns had fuel and were in a position to relieve any community shortage that might exist.

Producers in all sections are working in harmony with the railroad companies and fuel administrators, and whenever possible filling first the most urgent orders.

The supply of cars continues to be short, 65 per cent. working time during the past week, has been the maximum in some mining districts. Some mines with only one line of road, have fallen to as low as 50 per cent. while other mines that have three and four roads have in many instances worked almost full time. However, the week's production has been reduced on account of Thursday being a holiday.

That the operators in the southwest district have not as yet completely succeeded

in avoiding all labor troubles is verified by a walkout of the miners in the Oklahoma field. The stoppage was the result of a difference between the miners and Warden Pillen Co., because the company refused to grant the men the wage advance based on the recent working agreement made at Kansas City. This immediately had the effect of a sympathetic strike in other localities. However, it is expected that work will be resumed at an early date, because of the activities of the state and national fuel administrators. Fuel Administrator H. A. Garfield has notified Oklahoma bituminous operators that under no circumstances must they permit the closing down of their mines pending the settlement of their claims for increased mine prices for their output. He threatened to take over the mines and operate them, pending a determination of the cost of production, and in fact, it was made plain to all concerned that mines must not slacken their production.

Considerable discussion, and more or less anxiety has been manifest during the week just past regarding the Fuel Administrator's ruling concerning new mines. This affects mines begun not later than Sept. 1, 1916, and ready to produce coal before Jan. 1, 1918. It is claimed that mines of this class will be operated under the direct supervision of the Fuel Administrator, and that such mines will be allowed to charge prices that will cover their production cost and a profit of 15c. per ton. This profit will be allowed only after each mining operation in this class has developed to a point where its daily shipments amount to 250 tons. Such operations must submit to the Fuel Administrator monthly cost sheets as he may prescribe, and the only elements that shall enter into the cost shall be the actual cost of mining, hoisting, transportation and loading coal, and not to exceed half of the cost of maintenance and management. Operators thus effected are requested by association secretaries, to ask for precise definition of this rule and to proceed to carry out to the letter the instructions.

At Christopher, Ill., on the night of Nov. 28, occurred one of the worst accidents that have happened in Illinois for several months. Eighteen men are supposed to have perished as a result of a gas explosion in the New North mine of the Old Ben Mining Corporation. The above accident had a serious effect on tonnage output in Franklin County for the week, as many neighboring collieries lost a large part of their force for the remainder of the week, some locals refused to work altogether.

CHICAGO

Demand strong, not enough coal to supply dealers and steam users.

The present situation has been described by the local fuel administrator as bad indeed. His claim was that some people had stocked coal while others had no coal on hand with which to supply urgent needs. He asked the operators to supply this market with a little more coal, even if it was necessary to take some fuel from the steam trade and give it to the domestic trade. Operators express their entire willingness to comply with his request, and add that there will be coal in sufficient quantities if the railroads serving them will give them full car supply.

That the railroads are straining every nerve is not questioned, hence the debatable question is what can be done to relieve Chicago. Some of the best posted coal men will no doubt suggest, that the large producing centers ship all their output into this market for a limited time, thereby finding a satisfactory solution to a complex situation.

	Williamson and Franklin	Saline and Harrisburg	Fulton and Peoria	Grundy, La- Salle, Bureau and Will
Steam lump	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80 \$3.10@3.25
Domestic lump	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80 \$3.10@3.25
Egg or furnace	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80 \$3.10@3.25
Small egg or nut	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80 \$3.10@3.25
Stove	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80 \$3.10@3.25
Chestnut	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80 \$3.10@3.25
Pea	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80 \$3.10@3.25
Washed egg	\$2.65@2.80			\$2.65@2.80 \$3.10@3.25
Washed stove	\$2.65@2.80			\$2.65@2.80 \$3.10@3.25
Washed nut	\$2.65@2.80			\$2.65@2.80 \$3.10@3.25
Mine-run	\$2.40@2.55	\$2.40@2.55	\$2.40@2.55	\$2.40@2.55 \$2.85@3.00
Screenings	\$2.15@2.30	\$2.15@2.30	\$2.15@2.30	\$2.15@2.30 \$2.60@2.75
Washed slack	\$2.15@2.30	\$2.15@2.30	\$2.15@2.30	\$2.15@2.30 \$2.60@2.75

	Clinton and Sullivan	Knox and Greene	Eastern Kentucky	Pocah. and W. Va.	Penna.	Hocking	West Va. Splint
Dom. lump	\$2.65@2.80	\$2.65@2.80	\$3.10@3.25	\$2.60@2.75	\$2.60@2.75	\$3.05@3.20	\$2.85@3.00
Steam lump	\$2.65@2.80	\$2.65@2.80	\$3.10@3.25	\$2.60@2.75	\$2.60@2.75	\$3.05@3.20	\$2.85@3.00
Egg	\$2.65@2.80	\$2.65@2.80	\$3.10@3.25	\$2.60@2.75	\$2.60@2.75	\$3.05@3.20	\$2.85@3.00
Small egg or nut	\$2.65@2.80	\$2.65@2.80	\$3.10@3.25	\$2.60@2.75	\$2.60@2.75	\$3.05@3.20	\$2.85@3.00
Mine-run	\$2.40@2.55	\$2.40@2.55	\$2.85@3.00	\$2.40@2.65	\$2.45@2.60	\$2.70@2.85	\$2.60@2.75
Screenings	\$2.15@2.30	\$2.15@2.30	\$2.60@2.75	\$2.10@2.25	\$2.10@2.25	\$2.55@2.70	\$2.35@2.50

The situation with reference to Eastern coal is not different to the previous week. Anthracite, Hocking, eastern Kentucky are in insufficient supply. Pocahontas and New River are moving slowly on account of railroad congestions, and are consequently finding a market closer home. This virtually deprives Chicago and vicinity of all but a little of these grades.

Not only are coalmen, railroads, and fuel administrators doing all they can, but the Illinois Public Utilities Commission is active in checking up terminals, and coal mines, also requesting data from the railroads regarding the number of cars furnished, how many have been loaded, also how many have been ordered by the mining companies, and in fact doing many other things that will prove helpful.

Quotations in the Chicago market are as below, per net ton f.o.b. cars at mines.

MILWAUKEE

Lake coal coming in slowly, despite favorable navigation conditions. Slight reduction in soft coal screenings ordered.

Coal is coming in slowly, notwithstanding the prevalence of fine weather on the Lakes. It is doubtful if the prolongation of the season of navigation will result in much good, because of congestion at the ore docks at Escanaba and the head of the Lakes. This will force vessels to forego making another trip, as was the case with one carrier this week. Another large steamer which was slated for one more coal cargo is taking grain down and will hold it in storage at Buffalo. The season's receipts by Lake will fall short of the last year by several hundred thousand tons. Receipts of anthracite, however, will show a substantial gain.

Milwaukee consumers are still receiving anthracite, and shipments thereof and of soft coal are proceeding as fast as car conditions will allow; but the outlook is that before the robins reappear thousands of consumers will be forced to resort to bituminous grades.

Prices of coal in Milwaukee are held on a steady basis by government regulation. The only change made this week was a reduction of 10c. in Youghiogheny and Pittsburgh and Hocking screenings which are now held at \$6.85. Some complaint is made concerning the price and quality of coal being sold in certain cities in the state. The matter has been taken up by the Wisconsin Council of Defense.

ST. LOUIS

Conditions considerably easier in a general way. Warm weather prevailing and no unusually heavy demand except from the extreme north. Local situation satisfactory. Transportation extremely bad and shortage of cars getting worse. Little Eastern or Arkansas coal coming in.

Open, mild, warm, autumn weather prevails and is the greatest factor in relieving what would otherwise be a critical condition.

In many homes the past week there has been no occasion for fire, and there has been a decreased consumption throughout the entire territory as a result of the weather.

There is no unusual demand locally for anything outside of Williamson and Franklin County, and the tonnage of these grades coming here seems to be decreasing.

The demand still prevails in the country sections for coal, and many places are entirely without fuel, but they are being rapidly taken care of.

Steam conditions are much easier, although screenings have toned up over the demand for the past two weeks.

In the Mt. Olive field there has been a decreased tonnage largely on account of no cars, together with slowness in moving loads. The bulk of the tonnage that is produced is going for railroad and other contracts, there being little open commercial coal.

In the Standard fields conditions are somewhat similar, practically all mines loading most of their tonnage for railroad contracts. Even at that, the mines are idle a large proportion of the time because the loads are not pulled.

There is unrest among the miners, as is evidenced at one mine where they refused to go to work because there were not enough fire extinguishers in the mine.

At another point the mines were idle because the railroad instead of putting four miners' coaches on the train only put three.

If the weather was seasonable there would be an appalling shortage of coal from this field in the St. Louis market. There is nothing to indicate that conditions in the way of transportation will get better.

Coal piles up at East St. Louis in lots of from 1500 to 3000 cars on the different roads. On the Iron Mountain road one day there was reported between 1500 and 1700 cars. The railroads contend that this is caused by the shipment of coal on reconsigning privileges. This has been proved to be erroneous, as not more than 10 to 50 cars at the most of this coal comes in a day, and as there is a ready market for it, it has been reconsigned before it arrived.

There has been no change as yet in the retail price, although it is expected that something will be done toward the readjustment of prices in St. Louis by the St. Louis Fuel Committee in a short time.

A meeting of J. E. Williams, Fuel Administrator for the State of Illinois, and Wallace Crossley for Missouri, was held in St. Louis on Monday, Dec. 3, for the purpose of hearing complaints against Illinois operators for their failure to ship the same proportion of their available tonnage into the Missouri territory as they had in the past. The reconsigning privileges were also taken up and other matters in a general way.

The circular price of coal, per net ton, f.o.b. mines, is:

	Williamson and Franklin County	Mt. Olive and Staunton County	Standard
6-in. lump	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80
3x6-in. egg	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80
2x3-in. nut	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80
No. 2 nut	\$2.65@2.80		
No. 3 nut	\$2.65@2.80		
No. 4 nut	\$2.65@2.80		
No. 5 nut	\$2.15@2.30		
2-in. sergs.	\$2.15@2.30	\$2.15@2.30	\$2.15@2.30
2-in. lump			\$2.65@2.80
3-in. lump			\$2.65@2.80
Steam egg	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80
Mine run	\$2.40@2.55	\$2.40@2.55	\$2.40@2.55

Williamson & Franklin County rate is 87½ cents.

Other fields, 72½ cents.

Foreign Markets

ENGLAND

Coal—General conditions show no change for the better.

	New Prices	Regulation Prices
Best Welsh steam coal		\$8.64
Best seconds		8.27
Seconds		8.09
Best dry coal		7.92
Best Monmouthshires		7.92
Seconds		7.67
Best Cardiff smalls		6.21
Cardiff smalls		5.57

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—The market is still very bare of tonnage, and rates continue high.

Gibraltar	\$24.30	Port Said	48.60
Marseilles	21.78	Las Palmas	18.20
Genoa	24.60	St. Vincent	19.42
Alexandria	42.50	River Plate	29.16
Naples	23.86		

Reported by Hull Blyth & Co. of London and Cardiff, under date of 15th November, 1917.